ANNUAL REPORT

of the

DEPARTMENT *of* SURGERY

1960

THE NEW YORK HOSPITAL-CORNELL MEDICAL CENTER

525 EAST 68TH STREET, NEW YORK 21, N. Y.

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DEPARTMENT OF SURGERY
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by Frank Glenn, M.D.
S. W. Moore, M.D. John M. Beal, M.D.

To the President of the Board of Governors of the Society of The New York Hospital and the President of the Board of Trustees of Cornell University:

In presenting to you the annual report of the Department of Surgery for 1960, we wish first to acknowledge and express our appreciation for the facilities and support that you have so generously provided. Secondly, it should be emphasized that the accomplishments which we report are dependent upon the ability, integrity, and loyalty of a large number of people representing activities of great diversity but all essential.

The tragic sudden death of Dr. John M. Pearce on March 22 was a great loss to the Department of Surgery and particularly to his immediate associates. Dr. Pearce joined the department as Surgical Pathologist to The New York Hospital and Professor of Pathology in Surgery on July 1, 1948, succeeding the late N. Chandler Foot, M.D. In this position he was in constant and close association with all members of the surgical staff. His responsibility as well as his influence was far-reaching to junior and senior staff members alike. His contributions in teaching and research and his regular participation in the numerous conferences within the Center made him one of the most active members of the department. His warmth and understanding combined with his professional ability established his position as one that will be most difficult to fill.

Dr. Morris Schnittman, Surgeon to Outpatients in Urology, died on November 4. He had served as a member of the resident staff from October, 1944, to July, 1947, and thereafter until his death was a senior member of the Urology Section. He will be greatly missed.

The death of Dr. Gervais W. McAuliffe occurred on October 17, at the age of 63. He had been associated with The New York Hospital–Cornell Medical Center since its establishment in September, 1932, when he was appointed chief of the Otolaryngology Clinic and participated in many activities not only in the Department of Surgery but in the Medical College as well. He had been an attending surgeon in Otolaryngology and Associate Professor of Clinical Surgery for nearly 25 years, and was much loved and admired by his patients and fellow workers. He was a stimulating teacher who attracted many students by his demonstrations that were of an artistic nature. His memberships and participation in numerous professional and social organizations made him a popular representative of this Center.

On completion of his residency in Neurosurgery Dr. Russel H. Patterson, Jr. embarked upon an investigative program in addition to clinical responsibilities.

For ten weeks of the summer Dr. Dicran Goulian, Jr. from the Plastic Surgery Section utilized a traveling fellowship to study methods of transplants in Denmark, France, and Scotland, but principally with Dr. Gorer in the Pathology Laboratory of Guy's Hospital, London. Dr. Goulian is actively engaged in work with tissue transplantation problems in this department.

During the year construction of the Dr. Connie Guion Building progressed sufficiently to enable the new Emergency Unit to be put in operation on December 27.

A surgical unit devoted to infants and children was opened on January 18, under the direction of Dr. Frank Redo and in conjunction with the Department of Pediatrics.

SENIOR STAFF

Our assistants in administration of the department have been Dr. Preston A. Wade, Dr. Frank Redo, Dr. Peter Dineen, Dr. George Holswade, Dr. George Wantz, and Dr. Bjorn Thorbjarnarson. Attending surgeons in charge of the specialty sections have been:

Dr. Bronson S. Ray.....*Neurosurgery*
Dr. John M. McLean.....*Ophthalmology*
Dr. T. Campbell Thompson...(*Hospital for Special Surgery*) *Orthopedics*
Dr. James A. Moore.....*Otolaryngology*
Dr. Herbert Conway.....*Plastic Surgery*
Dr. Victor F. Marshall.....*Urology*
Dr. Joseph F. Artusio, Jr.....*Anesthesiology*
Dr. John M. Pearce, Dr. John T. Ellis.....*Surgical Pathology*
Dr. George F. Egan.....*Oral Surgery*
Dr. Cranston W. Holman....*Second Surgical Division, Bellevue Hospital*

Dr. Cranston Holman, Director of the Second (Cornell) Surgical Division of Bellevue, has been assisted by Dr. Joseph T. Kauer, Dr. Ernest Lampe, Dr. Eugene Cliffton, Dr. David Speer, and Dr. John H. Eckel.

In addition to the immediate members of the department, we have had assistance in teaching and clinical work from Dr. H. T. Randall of the Memorial Hospital and his immediate associates, Dr. Eugene Cliffton, Dr. Hollon Farr, and Dr. Walter Lawrence.

RESIDENT STAFF

The complete list of resident staff appointments in surgery for the year 1960 follows:

GENERAL SURGERY

Resident Surgeons

Walter B. Hoover, Jr.	May	1, 1959	to	Apr. 30,	1960
Charles W. Pearce	Sept.	1, 1959	to	Aug. 31,	1960
Arthur J. Okinaka	Jan.	1, 1960	to	Dec. 31,	1960
John C. Whitsell II	May	1, 1960	—		
Peter M. Guida	Sept.	1, 1960	—		

First Assistant Resident Surgeons

John C. Whitsell II	May	1, 1959	to	Apr. 30,	1960
Peter M. Guida	Sept.	1, 1959	to	Aug. 31,	1960
Frederick W. Fuller	Jan.	1, 1960	to	Dec. 31,	1960
Ames L. Filippone, Jr.	May	1, 1960	—		
Joseph P. Dineen	Sept.	1, 1960	—		

Assistant Resident Surgeons

Elliott E. Blinderman	July	1, 1959	to	June 30,	1960
Edward J. Carey, Jr.	July	1, 1959	to	June 30,	1960
Armand F. Cortese	July	1, 1959	to	June 30,	1960
Joseph P. Dineen	July	1, 1956	to	Aug. 31,	1960
John P. Donohue	July	1, 1959	to	June 30,	1960
Charles B. Dunaif	July	1, 1957	to	June 30,	1960
Ames L. Filippone, Jr.	Aug.	16, 1956	to	Apr. 10,	1960
William R. Grafe	July	1, 1956	to	Dec. 31,	1960
Maury L. Hanson	July	1, 1959	to	June 30,	1960
*George H. McLeod	July	1, 1959	to	Dec. 28,	1960
George P. Reading	July	1, 1958	to	June 30,	1960
Edward M. Ring	July	1, 1957	to	Mar. 31,	1960
Martin E. Rose	July	1, 1957	to	June 30,	1960
Edward P. Baker, Jr.	July	1, 1960—			
Arthur R. Beil, Jr.	July	1, 1960—			
Carl M. Beiles	July	1, 1960—			
Burton L. Berson	July	1, 1960—			
Richard E. Boden	July	1, 1960—			
Donald L. Bricker	July	1, 1960—			
C. Elton Cahow, Jr.	July	1, 1958—			
Julius Conn, Jr.	July	1, 1958—			
Arnold G. Diethelm	July	1, 1959—			
Roger R. Ecker	July	1, 1958—			
Charles F. Frey	July	1, 1959—			
Eugene M. Lance	July	1, 1959—			
Ralph J. Lewis	July	1, 1959—			

*Died December 28, 1960

Melvin G. Lund.....July 1, 1960—
J. Bruce McGovern.....July 1, 1960—
Charles K. McSherry.....July 1, 1958—
Richard G. Middleton.....July 1, 1959—
Frank G. Moody.....July 1, 1957—
Edward C. Muecke.....July 1, 1960—
John M. Pitman, Jr.....July 1, 1960—
James D. Prokop.....July 1, 1960—
Waid Rogers.....July 1, 1958—
Robert C. Runyon.....Jan. 1, 1960—
John F. Tulenko.....July 1, 1959—

Interns

July 1, 1959 to June 30, 1960

Carl M. Beiles
Burton L. Berson
Arthur R. Beil, Jr.
Richard E. Boden
Donald L. Bricker
Larry C Carey
Eric A. Hansen
Edward J. Law
Melvin G. Lund
J. Bruce McGovern
J. William McRoberts
St. Elmo Newton III
John M. Pitman, Jr.
James D. Prokop
Thomas H. White, Jr.

July 1, 1960 to June 30, 1961

Walter F. Alexander.....Stanford
George V. Burkholder.....Cornell
Robert L. Calhoun.....Johns Hopkins
Robert W. Cantrell.....George Washington
Stanley M. K. Chung.....Yale
L. Richard Hayne.....Cornell
William M. Heston III.....Michigan
Brent J. Holleran....State University of Iowa
Robert H. Horne.....Cornell
Charles W. Logan.....Vanderbilt
J. Ralph Macfarlane.....Cornell
James W. McCready.....Boston University
Gordon F. Schwartz.....Harvard
Lawrence A. Spitalny...University of Colorado
Kenneth G. Swan.....Cornell
James W. Thompson.....University of Virginia
Richard H. Thorp.....Boston University

January 1, 1960 to December 31, 1960

Robert Green.....Duke

Neurosurgery

Russel H. Patterson, Jr., Resident.....July 1, 1959 to June 30, 1960
Assistant Resident.July 1, 1957 to June 30, 1959
David A. Eaton, Resident.....July 1, 1960—
Assistant Resident.....July 1, 1958 to June 30, 1960
William S. Owen, Assistant Resident.....July 1, 1959—
Maury L. Hanson, Assistant Resident.....July 1, 1960—

Ophthalmology

Robert S. Perry, Resident.....Jan. 1, 1960 to June 30, 1960
Assistant Resident.....July 1, 1957 to Dec. 31, 1959
G. Brock Magruder, Resident.....July 1, 1960 to Dec. 31, 1960
Assistant Resident.....July 1, 1958 to June 30, 1960
Ricardo E. Rengel, Assistant Resident.....Jan. 1, 1960 to June 30, 1960
Andrew P. Ferry, Assistant Resident.....July 1, 1958 to Dec. 31, 1960
David K. Berler, Assistant Resident.....July 1, 1959—
Stanley L. Harris, Assistant Resident.....July 1, 1959—
John C. Alden, Assistant Resident.....July 1, 1960—
William F. Kearney, Jr., Assistant Resident..July 1, 1960—

Oral Surgery

Peter J. Montemarano, Resident.....July 1, 1959 to June 30, 1960
Intern.....July 1, 1958 to June 30, 1959
Thomas M. Nardozzo, Resident.....July 1, 1960—
Joseph P. Antario, Assistant Resident.....July 1, 1960—
Roy P. Adams, Intern.....July 1, 1959 to June 30, 1960
Donald M. Seifert, Intern.....July 1, 1959 to June 30, 1960
William J. Cimikoski, Intern.....July 1, 1960—

Orthopedics

John L. Sbarbaro, Jr., Assistant Resident	Jan.	1 to Mar. 31, 1960
	Apr.	1 to June 30, 1958
Allan E. Inglis, Assistant Resident	Apr.	1 to June 30, 1960
	July	1 to Sept. 30, 1958
Harlan C. Amstutz, Assistant Resident	Oct.	1 to Dec. 31, 1960
	Jan.	1 to Apr. 30, 1959
Laurence R. Schechter, Assistant Resident	July	1 to Sept. 30, 1960
Peter-Cyrus Rizzo, Jr., Assistant Resident	Jan.	1 to Mar. 31, 1960
Patrick J. Barry, Assistant Resident	Apr.	1 to June 30, 1960
Donald B. Reibel, Assistant Resident	July	– to Sept. 30, 1960
Richard M. Stark, Assistant Resident	Oct.	1 to Dec. 31, 1960

Otolaryngology

Milton Greenberg, Resident	July	1, 1959 to June 30, 1960
Assistant Resident	July	1, 1957 to June 30, 1959
Howard W. Lowery, Resident	July	1, 1960—
Assistant Resident	Mar.	1, 1958 to June 30, 1960
Pierre-Paul Gagnon, Assistant Resident	July	1, 1959—
Raynald Lavoie, Assistant Resident	July	1, 1959—
Raymond-Marie Guay, Assistant Resident	July	1, 1960—
Philip A. Zetterstrand, Assistant Resident	July	1, 1960—

Plastic Surgery

Dicran Goulian, Jr., Resident	July	1, 1959 to June 30, 1960
Assistant Resident	July	1, 1958 to June 30, 1959
Harry Hayes, Resident	July	1, 1960—
Assistant Resident	July	1, 1958 to June 30, 1960
Charles B. Dunaif, Assistant Resident	July	1, 1960—

Urology

Thomas J. Ferraro, Resident	July	1, 1959 to June 30, 1960
Assistant Resident	July	1, 1957 to June 30, 1959
John G. Keuhnelian, Resident	July	1, 1960—
Assistant Resident	July	1, 1957 to June 30, 1960
Myron P. Walzak, Assistant Resident	July	1, 1958—
John F. Rose, Jr., Assistant Resident	July	1, 1959—
John R. Woodard, Assistant Resident	July	1, 1959—
Francis F. Bartone, Assistant Resident	July	1, 1960—
Edward H. Murphy, Assistant Resident	July	1, 1960—

ADMISSIONS, OPERATIONS, AND DEATHS—1960

Pavilion Service	*Admissions*	*Operations*	*Deaths*			*Autopsies*			
			Oper.	*Nonop.*	*Total*	*Yes*	*Per Cent*	*No*	
General Surgery	1,609	1,768	59	12	71	53 (3 M.E.)*	74.6	18	
Pediatric Surgery	314	293	15	2	17	13 (4 M.E.)	76.5	4	
Fracture	221	209	13	—	13	5 (5 M.E.)	38.5	8	(5 M.E.)
Neurosurgery	226	378	19	—	19	14 (2 M.E.)	73.7	5	
Ophthalmology	366	382	1	—	1	—	0.0	1	
Oral Surgery	52	53	—	—	—	—	—	—	
Otolaryngology	528	399	—	2	2	1	50.0	1	
Plastic Surgery	293	360	1	—	1	—	0.0	1	(1 M.E.)
Urology	670	552	17	4	21	15 (1 M.E.)	71.4	6	
	4,279	4,394	125	20	145	101 (15 M.E.)	69.7	44	(6 M.E.)
Private Service									
General Surgery	2,212	2,149	46	17	63	50 (2 M.E.)	79.4	13	(1 M.E.)
Pediatric Surgery	81	66	1	—	1	—	0.0	1	
Fracture	260	167	3	1	4	1	25.0	3	
Neurosurgery	359	505	9	4	13	11 (1 M.E.)	84.6	2	
Ophthalmology	630	618	—	—	—	—	—	—	
Oral Surgery	28	28	—	—	—	—	—	—	
Otolaryngology	756	620	—	1	1	1	100.0	—	
Plastic Surgery	427	490	1	—	1	1 (1 M.E.)	100.0	—	
Urology	965	673	9	7	16	13	81.3	3	
	5,718	5,316	69	30	99	77 (4 M.E.)	77.8	22	(1 M.E.)
Semiprivate Teaching Service									
	849	767	20	4	24	17 (3 M.E.)	70.8	7	(1 M.E.)
Totals	10,846	10,477	214	54	268	195 (22 M.E.)		73	(8 M.E.)

* 3 Medical Examiner's cases included in the total of 53 autopsies.

GENERAL SURGERY

The general surgical pavilions admitted 1,923 patients in 1960. In comparison 1,895 patients were admitted in 1959. A total of 2,061 operations was performed, followed by 74 deaths, a mortality rate of 3.6 per cent. Autopsies were performed in 57, or 77 per cent. Nonoperative deaths occurred in 14 patients and autopsies were performed in 9 of these. There were 849 admissions to the semiprivate teaching service. This service performed 767 operations with 20 deaths in the postoperative period, a mortality rate of 2.6 per cent. Autopsies were performed in 13. There were 4 nonoperative deaths with 4 autopsies. During the year 2,293 private patients were admitted and 2,215 operations were performed. There were 47 postoperative deaths, an operative mortality of 2.1 per cent. Autopsies were performed in 37, or 78.7 per cent. An additional 17 nonoperative deaths occurred, with 13 autopsies.

The year began with initiation of a new service, the Pediatric Surgical Unit, which offers an expanded program in treatment of surgical problems in children. Problems related to infections in surgical patients have continued to receive special attention, and the rate of infection has remained low. Regularly scheduled inspection which was begun in the operating rooms has been extended to the surgical pavilions. The cooperative effort of the nursing and administrative services has markedly improved cleaning and maintenance in the surgical units. A new system for reporting and review of infected wounds has been instituted so that a thorough bacteriological study can be made and a comprehensive record obtained.

The program of cardiac surgery has progressed to a firm position wherein open heart surgery is now an efficient and safe method for the treatment of properly selected lesions.

Cardiovascular Surgery

The equipment for extracorporeal circulation has been augmented by a new pump oxygenator for clinical use only and a heat exchanger for temperature regulation during cardiac bypass. Open heart operations have been performed regularly twice each week. Closed cardiac operations for such diseases as mitral stenosis, coarctation of the aorta, patent ductus arteriosus, and tetralogy of Fallot have also continued, with a decreasing mortality rate. The total number of operations for mitral stenosis passed the 500 mark during the middle of the year. By the end of 1960 a total of 160 open heart procedures had been performed. The risk of open operations for uncomplicated pulmonic stenosis and atrial septal defects is the same or less than for most closed cardiac procedures. The mortality rate for open repair of complicated intracardiac defects in the very young and

of tetralogy of Fallot remains high, but with the ongoing concentration on this group of patients improvement is anticipated. An open approach to mitral stenosis in patients with clots in the left atrium has been most successful and has almost eliminated the serious complications associated with systemic dissemination of such clots.

Dr. Frank Glenn, Dr. George Holswade, Dr. Frank Redo, and Dr. Edward Goldsmith have performed the heart operations. The team concept which proved so successful in the past has been perpetuated. Supporting the efforts of the surgeons have been Dr. Harold Stewart and his associates from the Deparment of Medicine; Dr. Mary Allen Engle, Dr. Henry Goldberg, and staff from the Department of Pediatrics; Dr. Daniel Lukas and his colleagues from the Cardiopulmonary Laboratory; Dr. Joseph Artusio, Dr. Benjamin Marbury, Dr. Valentino Mazzia, and staff from the Department of Anesthesiology; Dr. Israel Steinberg and Dr. Nathaniel Finby from the Department of Radiology; Dr. Curtis Mendelson from the Department of Obstetrics and Gynecology; Miss Jane Haber of the Blood Bank; and Dr. Aaron Kellner of Central Laboratories.

Cancer

The potentialities of chemotherapeutic measures in cancer treatment have been investigated. In cooperation with the National Study Section of the Adjuvant Cancer Chemotherapy Program, supported by the United States Public Health Service, patients with carcinoma of the breast, colon, and stomach have been given chemotherapeutic agents in an effort to prevent dissemination of cancer cells through the blood stream at the time of surgical removal of the lesions. Under the direction of Dr. John Beal and Dr. George Cornell, the program of treatment of patients with advanced cancer has expanded. Cancer chemotherapeutic agents are administered when standard forms of surgery or irradiation cannot be effectively employed. Approximately one-third of the patients so treated have experienced definite palliation for varying periods of time—in one case for over a year. During the latter part of 1960, perfusion of the liver was instituted in selected patients for treatment of metastatic cancer. This involves administration of an antimetabolite via the hepatic artery and simultaneous intramuscular injection of the appropriate antidote to protect the patient against systemic toxic effects of the antimetabolite.

Dr. George Cornell and Dr. Beal, with resident staff members, have investigated the effects of surgery upon functions of the gastrointestinal tract. Selected patients who earlier had undergone operations for cancer, especially carcinoma of the stomach, were admitted to the hospital. By metabolic balance techniques and studies using radioisotype techniques,

the relative efficacy of absorption of various foodstuffs by these patients was assessed.

Dr. George Cornell continues to direct the Tumor Registry. Case finding and follow-up have been increased. The registry has been gathering statistical data from the hospital's experience with neoplastic disease and, aided by the hospital staff, has filed and tabulated a significant fund of information. Other activities include promotion of research in clinical oncology and stimulation of interest in problems presented by various forms of cancer.

Trauma and Fracture

In their continuing study of the injured patient, Dr. Preston Wade and Dr. Robert Patterson have been assisted by Dr. Braunstein, Dr. Paul Skudder, Dr. Howard Balensweig, Dr. J. Paul Harvey, Jr., and Dr. Bernard Jacobs. Dr. Robert Clarke joined the service in November.

The fifth annual course in trauma was given in June, under the auspices of Cornell University Medical College. Fifty lecture sessions were conducted by Cornell University faculty members and staff members of The New York Hospital and the Hospital for Special Surgery. One hundred surgeons from many states and foreign countries attended the course.

Attendance at the Tuesday evening fracture conferences has averaged 36, including staff from The New York Hospital-Cornell Medical Center and neighboring hospitals.

A textbook, Surgical Treatment of Trauma, was published in 1960. This volume was edited by Dr. Wade, with 35 members of the Center staff contributing chapters.

The Emergency Unit Study, authorized by the Joint Action Committee of the American College of Surgeons, the National Safety Council, and the American Association for the Surgery of Trauma, continues under the direction of Dr. James R. McCarroll from the Department of Preventive Medicine and Public Health, and Dr. Skudder. At the meeting of the National Association for the Surgery of Trauma, Dr. Skudder reported on "A Follow-Up Study of Tetanus Antitoxin in the Emergency Room." Dr. Rolla D. Campbell read a paper entitled "Dislocations of the Lunate Bone." Dr. Julius Conn, Jr. and Dr. Wade presented a paper on "Fractures of the Elbow."

Pediatric Surgery

In January the Pediatric Surgical Unit opened with 23 beds, under the direction of Dr. Redo assisted by Dr. Goldsmith. Facilities provide for the care of patients ranging from premature infants to children 14

years of age. General surgical treatment is rendered including thoracic, cardiovascular, head and neck, and abdominal problems.

Surgical residents are assigned to the units for four month periods. A senior general surgical resident acts as pediatric surgical resident, aided by an assistant resident and an intern. The Department of Pediatrics also assigns one senior and one junior assistant resident. An operating room has been provided for this unit. An outpatient clinic is held twice weekly. Teaching rounds, also conducted twice a week, are attended by senior and resident staff as well as students. Visting physicians are welcome. Additional rounds are held once a week by Dr. Redo and an attending pediatrician. Each Friday afternoon a combined pediatric-surgical-medical conference is scheduled.

Dr. Redo and Dr. Fuller have reviewed the hospital's experience with esophageal atresia and have reported a treatment method for this problem in premature infants. They have also presented information concerning management of malrotation of the aorta. Dr. Filippone is analyzing chest tumors in the pediatric age group. Dr. Joseph Dineen is reviewing acute appendicitis in patients up to 10 years of age.

NEUROSURGERY

Dr. Bronson S. Ray, Attending Surgeon in Charge

Dr. Ray has been assisted by Dr. Herbert Parsons, Associate Attending Surgeon (Neurosurgery) and Dr. Howard S. Dunbar, Assistant Attending Surgeon (Neurosurgery). Dr. Russel H. Patterson, Jr. was resident neurosurgeon through June 30. He then joined the staff as Instructor in Surgery and Fellow in Neurosurgery. Dr. David Eaton became chief resident July 1. Dr. William Owen and Dr. Maury Hanson were assistant residents.

Admissions to Neurosurgery totalled 585 patients, coincidentally the same number as in 1959. There were 883 operative procedures performed on 575 patients. Postoperative deaths occurred in 28 patients, an operative mortality of 3.2 per cent. Autopsies were performed in 21, or 75 per cent.

In a new approach to malignant brain tumors, a number of patients have been treated with continuous intra-arterial perfusion of an antimetabolite (Methotrexate). Because the drug is administered directly into the artery which supplies the tumor, very high tumor dose levels can be maintained. Systemic effects of the drug are prevented by parenteral administration of an antidote (citrovorum factor). Results are still inconclusive but sufficiently encouraging to warrant extension of the study. Because surgery and irradiation have proven unsatisfactory in the man-

agement of malignant brain tumors, investigation of chemotherapy is being pursued in the hope of improving future treatment.

A long-term follow-up study of patients with hypertensive cardiovascular disease treated by thoracolumbar sympathectomy has been completed with the aid of an IBM tabulator. Particular attention was given to factors in the history, physical examination, and laboratory data which seemed most important in determining prognosis after surgical treatment.

Interest has continued in the results of surgical ablation of the hypophysis. The total number of hypophysectomies has reached 512. The indication for operation was advanced carcinoma of the breast in 433, diabetic retinopathy in 17, advanced carcinoma of the prostate in 17, acromegaly in 13, Cushing's syndrome in 5, exophthalmos in 3, and miscellaneous types of cancer in 24. More careful selection of patients for hypophysectomy has resulted in a significant decrease in postoperative mortality. Among the last 107 patients subjected to this operation for mammary carcinoma, only one death occurred—a mortality rate of 0.9 per cent. Results in acromegalic and diabetic patients have been gratifying and further investigation in these fields is planned.

A study on aneurysms and subarachnoid hemorrhage has been pursued with the Cornell Division of Neurology at Bellevue Medical Center, aided by the National Institute of Health. In association with the Department of Medicine, the relation of thyroid disease to pituitary gland function has been explored. Other projects include localization of intracranial tumors with radioactive iodine and, in the Cornell Neurosurgical Division at Bellvue, investigation of destructive lesions in the globus pallidus.

In October Dr. Ray was elected a member of the Visiting Committee of Brookhaven National Laboratory, Associated Universities, Inc., to serve four years for their Department of Medicine. This committee meets twice a year to provide the Board of Trustees with an independent assessment of the quality and significance of work at Brookhaven, and to give the laboratory director and department staff a source of external, objective counsel in developing scientific programs.

OPHTHALMOLOGY

DR. JOHN M. MCLEAN, Attending Surgeon in Charge

Dr. McLean has had as his immediate associate throughout the year Dr. Edward A. Dunlap. Dr. Robert Perry completed his residency and entered the United States Public Health Service. Dr. Ricardo Rengel, on completion of his residency, returned to his native Puerto Rico to teach at the University and practice. Dr. Andrew Ferry and Dr. Brock Magruder became senior residents. Dr. David Berler, Dr. Stanley Harris, Dr. John

Alden, and Dr. William Kearney are assistant residents. Dr. Ira Kaufman resigned to organize an eye service at the Brooklyn Veterans Hospital in affiliation with the State University. Dr. Harvey A. Lincoff joined the section to concentrate on neuro-ophthalmological problems. Dr. Futaba Aizawa completed her research training and returned to Sapporo Medical College in Japan to teach and introduce American methods. Dr. Hugh Nano of Buenos Aires replaced her as Research Fellow supported by the Merck Corporation. The total complement of attending staff remains at 13.

The year has seen a further cementing of our relationship with the Memorial Center. Dr. Taylor, with assistant residents in rotation, now makes regular rounds on patients in Ewing and Memorial Hospital wards and attends their Head and Neck Clinic. This mutually beneficial arrangement results in better care for the many ophthalmological problems and the study of much interesting teaching material.

Dr. MeLean has instituted a weekly joint conference with the staff and residents in Surgical Pathology. The routine eye specimens are studied with representative cases from his large collection of rare specimens in ophthalmic pathology. Each senior assistant resident rotates through eye pathology for six months, taking active part in the monthly staff conference.

Dr. Galin and Dr. McLean, assisted by Dr. Baras, Dr. Aizawa, and Dr. Nano, have continued their detailed studies of intraocular fluid exchange and osmotic and pressure relationships. These efforts are resulting in publications basic to the understanding of glaucoma. Dr. Peretz, aided by Rockefeller Foundation staff members, has continued his studies of electrophoretic patterns of intraocular protein in uveitis.

Dr. Dunlap has been engaged in a detailed clinical study of ocular muscle problems in cerebral palsy, under a grant from the Cerebral Palsy Foundation. A large volume of material has been obtained from the Cerebral Palsy Center on Long Island and the Cerebral Palsy Clinic of the Hospital for Special Surgery. Such a comprehensive study has never been done before and promises to throw new light on eye care for victims of this seriously crippling disease. Dr. Gordon continues his studies on clinical application of various corticosteroids to ocular inflammatory disease.

Generous gifts from grateful patients have made possible the purchase of a light coagulator. With this apparatus it will be possible to render better service to patients with retinal detachments and intraocular tumors, and also to pursue new channels of research.

Clinical activity reached a new high as a result of an increase predominantly in insurance covered patients There were 996 patients ad-

mitted to the Ophthalmology Section in contrast to 893 in 1959. Of these, 366 were admitted to the pavilion service, with 382 operations performed. There were 630 private patients admitted and 618 operations performed.

ORTHOPEDICS

Dr. T. Campbell Thompson, Attending Surgeon in Charge

Of the 196 beds in the Hospital for Special Surgery approximately 60 per cent are occupied by orthopedic patients, and the rest by patients with arthritis and similar crippling diseases. This means that besides providing up-to-date facilities for 1,600 operations a year, large special departments for Physical Medicine, Occupational Therapy, and Rehabilitation must be maintained.

The annual total of over 50,000 visits to the Outpatient Department provides a unique volume of clinical material which insures adequate experience for resident staff as well as for teaching medical students. In addition to daily Orthopedic and Arthritic Clinics there are 10 special weekly clinics, each supervised by an attending surgeon.

The improved training program for orthopedic residents includes six months on the Fracture Service, one year at the Veterans Administration Hospital in the Bronx, two months on the Bone Tumor Service at Memorial Hospital, and four months free for basic sciences. The rest of the 3½ year program is spent on the Adult and Childrens Orthopedic Services at the Hospital for Special Surgery.

After attending a special review course, Mrs. Selma Katz, R.N., from the operating room staff, established a training course for surgical technicians. The first class included five Hospital for Special Surgery employees who have substantially alleviated problems due to the shortage of professional nurses in the operating room.

The Caspary Research Building, opened during 1960, was formally dedicated on November 17. The first floor provides for housing and care of experimental animals. A bridge across Seventy-First Street at the second floor connects the hospital laboratories with the research building. On the third and fourth floors are research laboratories of many categories. The second and fifth floors are yet to be developed. Several exhibits were prepared and a number of clinical and research papers were published. One notable line of research has been the rheumatoid factor and its relation to rheumatoid arthritis In this study the talents of orthopedic surgeons, rheumatologists, pathologists, immunologists, and protein chemists have been combined.

OTOLARYNGOLOGY

Dr. James A. Moore, Attending Surgeon in Charge

Dr. Moore has been supported by a senior staff of 11 and a resident staff of 4. Dr. Milton Greenberg completed his residency June 30 and has entered private practice in Danville, Virginia. Dr. Howard Lowery became resident surgeon July 1. Dr. Pierre-Paul Gagnon and Dr. Raynald Lavoie were appointed second year assistant resident surgeons. Dr. Raymond-Marie Guay is serving as first year assistant resident.

Admissions to the Otolaryngology Section numbered 1,284 and 1,019 operations were performed. Among the major procedures were 6 laryngectomies, 2 radical neck dissections, and 13 modified radical and radical mastoidectomies. In addition, 13 radical sinusotomies, 89 mobilization of the stapes operations, and 19 tracheotomies were performed. Tonsillectomies and/or adenoidectomies numbered 573, and 71 septectomies were performed.

The Speech and Hearing Center continues to cooperate with the State of New York Department of Health, Bureau of Medical Rehabilitation, and Bureau for Handicapped Children. Approximately 50 children with hearing deficits are being followed in conjunction with the State conservation of health program.

PLASTIC SURGERY

Dr. Herbert Conway, Attending Surgeon in Charge

Dr. Conway has been assisted by Dr. James W. Smith and Dr. Merton Griswold. Dr. Dicran Goulian, Jr. completed his resident training June 30 and was succeeded as resident surgeon by Dr. Harry Hayes. Dr. Goulian was appointed Research Fellow in Plastic Surgery and spent three months in the Immunology Laboratory of Guy's Hospital, London. Dr. Charles Dunaif was appointed assistant resident surgeon July 1.

Despite the serious decrease in scheduled time in the operating rooms, the over-all activity of the service showed little alteration. There were 293 patients admitted to the pavilions, in contrast to 316 in 1959. Pavilion operations numbered 360, with 1 death. Private patient admissions decreased from 439 in 1959 to 427 in 1960. However, the number of operations increased approximately 4 per cent, to a total of 490.

Outpatient service has continued to place heavy demands. The clinic is still approved by the City of New York as a Cleft Palate Center. Speech therapy and orthodontics are provided.

Ronald Gillette, Ph.D. and Miss Angelica Findley have participated in the section's reasearch. Two projects were particularly gratifying. In

one the immunity response elicited by transplantation of homografts to the anterior chamber of the eye was studied. It was demonstrated that grafts to this site produce a systemic immune reaction, contradicting a generally held view. Dr. Goulian has studied a practical method for early differentiation of necrotic and viable tissue in burns. He has used intravenous injection of Evans blue dye and has extended laboratory studies to clinical application. Problems concerned with the homografting response remained the major focus of laboratory study.

Dr James Smith has begun an analysis of flexor tendon injuries and is studying the deformities associated with gout. Injection methods are being used to investigate circulation in the lower extremities.

UROLOGY

Dr. Victor F. Marshall, Attending Surgeon in Charge

Dr. Marshall has had Dr. John H. McGovern as his immediate associate. Dr. Thomas Ferraro completed his resident training June 30 and entered private practice in Concord, New Hampshire. Dr. John Keuhnelian was appointed resident surgeon July 1 and Dr. Myron Walzak succeeded him as first assistant resident surgeon. Dr. Francis Bartone, Dr. Edward Murphy, Dr. John Woodard, and Dr. John Rose have served as assistant resident surgeons. Dr. James Green resigned from the staff. Dr. Arthur Wyker left the attending and teaching staff to accept a full-time academic appointment in the Department of Urology at the University of Virginia. Dr. John Draper, who continues to direct the Cornell Division of Urology at the Bellevue Medical Center, has accepted the position of Chief of Urology at St Luke's Hospital.

Among the varied endeavors of 1960, evaluation of renal function by means of radioactive Diodrast has continued with the aid of Dr. Evans and Dr. Poker from the Department of Radiology. This method consists of intravenous injection of a small amount of radioactive Diodrast and then measurement of concentration in the kidneys by a scintillation counter. A new substance, radioactive Hippuran, has recently been introduced in an effort to improve the results.

With Dr. Peter Dineen, intensive study of problems in sterilization of optical urologic instruments has been undertaken. A pilot study is in progress to determine the efficacy of sterilizing cystoscopic instruments by pasteurization.

The Urology Section has participated in developing a new endoscopic instrument which is now available from American Cystoscope Makers, Inc. The instrument is a fiber optic system composed of thousands of

strands of optical glass accurately arranged to transmit an image. A source of cold light external to the patient is provided. It is possible to visualize the interiors of the bladder, urethra, and ureter. In one case a kidney stone was identified by introduction of the endoscope through the intact ureter during an operation. It is likely that the instrument can be applied to the common duct and bronchi. However, manipulation of the lens system and associated irrigation apparatus will require improvement prior to routine clinical application.

With assistance from Dr. Bearn of the Rockefeller Institue for Medical Research, Dr. McGovern has made a valuable study of the chromosome pattern in three cases of true hermaphroditism. Dr. Keuhnelian and Dr. Bartone are reviewing autopsy cases of uremia to determine the correlation between clinical and pathologic diagnoses. Special attention is given to diagnostic methods in an effort to improve antemortem accuracy of diagnosis. Dr. Marshall and Dr. Whitmore are compiling statistics of survival after radical cystectomy for carcinoma of the bladder. Dr. Walzak has completed a report on intrapelvic renal pressures following surgery and is correlating the findings with prognosis. Dr. Murphy is reviewing the experience with idiopathic renal hematuria. Dr. Marshall and Dr. Woodard have prepared a paper on reconstruction of the female urethra after trauma. Dr. Briee has surveyed the findings in 23 cases of carcinoma of the prostate in which pelvic lymph node dissection was performed. In this series, which was carefully selected as being operable, lymph node metastasis was found in approximately 30 per cent of the cases.

ANESTHESIOLOGY

Dr. Joseph F. Artusio, Jr., Anesthesiologist in Chief

The Department of Anesthesiology, which has completed its third full year as a separate department in the hospital, continues to cooperate closely and to integrate its service and teaching functions with the Department of Surgery.

Dr. Artusio has been supported by a staff of 10 attending anesthesiologists. Dr. Benjamin Marbury has supervised anesthesia administered in the Department of Obstetrics and Gynecology. Dr. Valentino Mazzia has guided the clinical anesthesia in surgery and supervised the resident training program. Dr. Marjorie Topkins has been responsible for management of the nurse anesthetists. Dr. Robert Schrier has supervised the care of equipment, and Dr. Alan Van Poznak has prosecuted the development of the research program. Dr. Manfred Alexander, Assistant Attending Anesthesiologist, resigned July 1 and entered private practice in Pompton Plains, New Jersey.

Dr. George Monahan completed his resident training June 30 and joined the staff as Assistant Attending Anesthesiologist. Dr. Richard Hunt, Dr. Mehdi Jandaghi, and Dr. Esmerelda Mercado also completed their training in anesthesiology June 30. Dr. Hunt joined in the United States Air Force; Dr. Jandaghi returned to Iran; and Dr. Mercado went back to the Philippines. The resident staff increased during 1960, with a total of 14 resident anesthesiologists functioning in the department.

In June the Anesthesia Library opened on the eleventh floor, providing an excellent area for conferences and study. The research program in new fluorinated hydrocarbons and fluorinated ethers has contributed significantly to clinical anesthesia. Methoxyflurane, which has been given a clinical trial, proves to be an excellent nonflammable, nonexplosive anesthetic agent. Since the original report by Dr. Artusio and his associates, this compound has been investigated by many other teaching institutions. Favorable results indicate that Methoxyflurane will become a useful clinical anesthetic. It is being distributed by Abbott Laboratories under the trade name of Penthrane. In recent months a nonexplosive, nonflammable fluorinated hydrocarbon of promise has been tested.

The IBM statistical system continues to function and grow. Not only is it effective in analyzing the number and types of anesthetics used, but it also provides a means for the statistical compilation of complications and deaths.

The summary of principal anesthetics and techniques is as follows:

Cyclopropane	3,317	
Ether—closed circle	1,354	
Ether—open	787	
Nitrous oxide	1,409	
Intravenous pentothal	67	
Rectal pentothal	26	
Vinethene	23	
Regional block for surgery	56	
Spinal	190	
Caudal	10	
Fluothane	756	
Investigative drugs	357	
		8,352
Locals O. R.	2,928	
Blocks O. R. and Clinic (therapeutic and diagnostic)	30	
Locals Clinic	429	
Adjuvants—electroshock therapy	199	
		3,586
Total		11,938
Private patients	6,987	
Pavilion patients	4,951	
		11,938

SURGICAL PATHOLOGY

Dr. John T. Ellis, Pathologist in Charge

Following the untimely death of Dr. John Pearce on March 22, 1960, the activities of the Laboratory for Surgical Pathology have been directed by Dr. Ellis in association with Dr. Vogel, and assisted by Dr. Eric Pike and Dr. Jean Todd. Dr. Pike completed his training in June and became Assistant Director of Laboratories at St. John's General Hospital, St. John's, Newfoundland. Dr. Todd finished resident training in October and was appointed Assistant Attending Pathologist.

The number of specimens processed by the Diagnostic Laboratory numbered 9,468, in comparison to 9,337 in 1959. As in previous years malignant neoplasms accounted for approximately 20 per cent of the total number of diagnoses. There were 523 operative consultations utilizing frozen sections, and 476 photographs were made of either clinical problems in the operating room or surgical specimens in the laboratory. In the Histology Laboratory 26,334 slides were prepared.

Training in surgical pathology has been afforded for surgical interns and resident staff of General Surgery, Pathology, and Radiology. A new teaching conference in ophthalmic pathology was instituted for the house staff and conducted weekly by Dr. John McLean and Dr. Todd. A collection of microscopic slides of typical lesions is being put in order as a teaching aid. Sets of these slides will be available for resident staff and will be a valuable adjunct for instruction in surgical pathology, particularly in preparation for specialty board examinations.

The laboratory continues to provide pathologic material and advice in preparation of manuscripts for publication by the surgical staff. The revised teaching program is now based on case presentation techniques. Renovation of the laboratory is in progress and will ultimately provide superior facilities for instruction in gross and microscopic surgical pathology.

OPERATING ROOMS

Miss Dorothy Ellison, R.N., Head of Operating Room Nursing Service

Miss Ellison has been assisted by:

Mrs. Lucy Hickey, Supervisor of the Private Operating Room
Mrs. Wanda Burley, Supervisor of the General Operating Room
Miss Gladys Jones, Supervisor of the Recovery Room
Miss Anna Ondovchick, Supervisor of the Teaching Program

Operations and treatments during 1960 totalled 17,448. This represented a slight decrease in comparison to the 1959 total of 17,799. Early in the year a serious shortage of nursing staff restricted activities in the

operating rooms. Curtailment of the operating schedule was sufficient to limit admissions to the hospital. During the summer the nursing staff increased and was supplemented by technical assistance so that by September a full operating schedule was resumed. Prosecution of the limited schedule was made possible by the valiant cooperation of the medical staff and untiring efforts of a nucleus of nursing staff.

The appointment of Mrs. Wanda Burley as Supervisor of the General Operating Room is noted with pleasure.

Operating Room Committee

Members: Dr. John M. Beal, Chairman; Miss Dorothy Ellison, Secretary; Dr. Joseph Artusio; Dr. Peter Dineen; Dr. William Sweeney; Dr. Philip Wilson, Jr.; Dr. John McGovern; Miss Lydia Hansen; Mr. Norman Girard; Dr. August Groeschel; Mr. James O'Connell; Mr. William Walton.

This committee recommends policies to the Medical Board and supervises the function of the operating rooms. Early in the year established policies were reviewed. New policies and changes since the last revision were incorporated in a bulletin and distributed for the information of the staff. The committee has continued to survey standards of efficiency and cleanliness in the operating rooms. A team of inspectors headed by Dr. Peter Dineen makes a monthly tour of the surgical areas to insure satifactory cleaning and maintenance.

The committee has studied statistics of monthly costs and recommended procedures to reduce expenditures where indicated. After suitable trial, new products and procedures have been introduced when they appeared to be to the best interests of patient care and likely to save labor and cost.

In consultation with hospital administrators, the committee has undertaken renovation of the operating rooms. Thus far three rooms have been extensively altered. Reduction of window area and new flooring should increase the efficiency of air conditioning, aid cleaning, and help to reduce hazards of cross contamination. In order to interfere as little as possible with normal activities, the renovation program is projected over a period of several months. Locker and dressing rooms will eventually be included.

During the early 1960 shortage of nursing staff, the committee formulated a workable operating room schedule within the capabilities of the existing staff. Addition of a limited nonprofessional technical staff was approved and policies were established to cover the responsibilities allocated to this group.

Patient safety was studied frequently and policies relating to this area were reviewed. At the committee's request all electrical equipment used in the operating rooms was inspected and tested by the Engineering De-

partment to insure maximum safety. Dr. Dineen continues to supervise sterility tests. Packaging and storage methods have been scrutinized. As a result the storage of small sterile supplies has been restricted to one week and an investigation of improved methods of packaging all sterile supplies has been outlined.

LABORATORIES FOR SURGICAL RESEARCH

Activities in the Laboratories for Surgical Research have increased both in scope and number. The facilities provide for basic and applied research in problems related to surgery. Assistance is rendered in the support or management of many difficult or perplexing clinical situations. Dr. John Beal directs the research activities. Dr. Helena Gilder guides the biochemical aspects of laboratory investigations. Dr. Henry Mannix completed a Fellowship in Research on April 30.

A weekly meeting is held for presentation and informal discussion of projects in progress. These meetings keep the staff investigators informed and also provide a forum for constructive criticism.

Cardiovascular Research

Dr. George Holswade, Dr. Frank Redo, and Dr. Edward Goldsmith have continued their studies on extracorporeal circulation. After thorough laboratory trial, a new and more efficient pump oxygenator system was put into clinical use, as well as a more physiologic method of induced cardioplegia by selective cardiac hypothermia. More effective use of the heat exchange unit in conjunction with extracorporeal circulation has been achieved. Dr. Holswade, with Dr. Mary Allen Engle from the Department of Pediatrics, has continued to study experimental correction of anomalies of the great vessels. As an offshoot of their investigation a method of creating an extracardiac atrial septal defect was developed, and an induction pacemaker for treating heart block was devised. The pacemaker enables cardiac rate to be regulated without wires passing through the skin, thus eliminating danger of infection. The power unit of the pacemaker is being transistorized and miniturized. For the last six months of 1960 Dr. Holswade and Dr. Goldsmith were aided in this work by Dr. Constantine Linardos, who also assisted with clinical operation of the pump oxygenator.

Dr. Redo and Dr. Ecker have conducted experiments that attempt to correct transposition of the great vessels. The procedure currently subject to evaluation involves a direct shunt from the right atrium into the pulmonary artery. A ventricular septal defect which converts the ventricles into a single chamber is created. With this procedure venous blood is directed into the pulmonary artery. Blood returning from the lungs is

received in the single ventricle which then pumps it into the aorta. Oxygenated blood is thus delivered into the systemic circulation. The operation is designed for performance without extracorporeal cirulatory support and holds promise for amelioration of a yet unsolved problem.

Dr. Redo continues investigation of cardiac metabolism with the isolated perfused preparation. A study of the effects of prolonged cardioplegia has been completed. Currently in progress is an evaluation of the differences between reversible and irreversible cardiac arrest.

Dr. Goldsmith, with Dr. Finby and Dr. Halpern from the Department of Radiology, has been developing a safe, reliable method for radiographie display of the aorta and of the coronary, carotid, mesenteric, and renal arteries. Techniques and media were tested in the laboratory. Retrograde femoral artery catheterization and selective arteriography have now been applied as clinical diagnostic modalities for appropriate patients with suspected cardiovascular disease.

Dr. Goldsmith has developed a technique to determine variations in myocardial blood supply. His method involves detection of minute transient changes in myocardial temperature after injection of cold saline into the aorta. He has also devised an electronic apparatus which permits simultaneous recording of temperature changes in 12 areas of the myocardium. This sensitive instrument can detect remarkably small changes in blood flow and offers great promise in elucidating the availability of arterial blood to critical areas of the heart.

Surgical Bacteriology

The Laboratory for Surgical Bacteriologic Research has been directed by Dr. Peter Dineen with Dr. Henry Mannix as his associate. Investigation has been conducted at the basic level as well as along clinical lines. A signal achievement of 1960 was the demonstration of production of penicillinase *in vivo* in staphylococci. Experiments are in progress to develop an antipenicillinase. The effects of various antibiotics have been examined. Reduction of intestinal bacteria by the use of neomycin in mice was found to render them more susceptible to systemic infection by staphylococci. In treatment of staphylococcal infections it was discovered that there is a critical period during which the infecting inoculum is most sensitive to streptomycin. In mice this period is approximately one hour after challenge.

Dr. Mannix has considered the effect of corticosteroids on experimental staphylococcal infection in mice. He has demonstrated that steroids can reduce the resistance of mice to both penicillin-sensitive and penicillin-resistant staphylococcal infections, and that penicillin may be less effective

in combatting such infections when steroids are administered. With Dr. Hook, Dr. McCormack, and Dr. Kaye from the Department of Medicine, Dr. Mannix is engaged in experimental production and differential treatment of subacute bacterial endocarditis.

Clinical investigation of skin germicides continues. More than a dozen products have been tested. Attention is given to the effectiveness of various agents in the surgical scrub and in preparation of the patient's skin for operation. It is planned to define a generally applicable standard for skin disinfection.

To investigate the epidermologic aspects of wound infections caused by coagulase-positive staphylococci, a complete phage typing unit has been established.

Dr. Barnes and Dr. Redo have been evaluating the use of radioactive materials in diagnosis of infectious processes. A rapid uptake of radioactive iodinated serum albumin has been found at the site of experimentally produced sterile abscesses. This high activity persists for 10 to 12 days. Radioactive sodium behaves in a similar though less dramatic fashion.

Gastrointestinal Research

Several avenues of approach to the peptic ulcer problem are being explored. Dr. Barnes and Dr. Redo have continued their work with an inhibitor of peptic activity recovered from gastric juice. Attempts to identify and isolate the inhibitor are in progress. Chromatographic techniques have shown the inhibiting compound to be composed of several amino acids. Dr. Barnes, Dr. Redo, and Dr. Ecker have investigated various homologous and synthetic materials as replacements for the esophagus. Recent attention has been directed toward Teflon prostheses treated with coating or non-wetting materials.

Attempts to replace the gastric mucosa with nonacid-bearing epithelium have continued. Dr. Beal, in association with Dr. Moody, Dr. McSherry, Dr. Frey, and Dr. Ecker, has demonstrated that skin offers the best prospect. Explants of the gastric wall placed on the anterior abdominal wall have proved immobilization to be an important factor. Successful application of grafts to intact stomach has yet to be achieved and is subject to ongoing study. Dr. Beal, in cooperation with Dr. Kirby Martin of the Department of Medicine, has experimented with production of duodenal and gastric ulcers by interposition of the duodenum in the distal portion of the gastrointestinal tract. The effect of this procedure on gastric secretion has been studied. The significance of intestinal fluid reflux and its relation to the presence or absence of peptic ulcers forms an important area of investigation.

Dr. Mannix has undertaken to determine the adrenal vein steroid levels in experimental preparations during the development of peptic ulcer. The project is difficult and time-consuming and is projected over a period of several months.

Liver and Biliary Tract Research

Dr. Thorbjarnarson has directed activities in this field. Autotransplantation of liver tissue has been achieved by a variety of methods. Liver tissue will survive separation from the main mass of the organ when a new and adequate blood supply is present. However, the transplanted liver tissue does not appear to maintain structural integrity but rather has the histologic appearance of cirrhosis. Dr Thorbjarnarson, with Dr. Mary Ann Payne from the Department of Medicine, has initiated a study of phosphate-transferring and phosphate-reducing enzymes in the liver and biliary tract. A corollary project is designed to determine the relationship between the pH of peripheral blood and of bile.

Surgical Metabolism

Dr. Beal, Dr. Gilder, and Dr. George Cornell have had several projects related to the effect of operations upon body composition and function. Metabolic studies were continued upon patients subjected to operations on the gastrointestinal tract. The body components were measured to determine changes in lean tissue, body fat, and water. The data from 50 patients analyzed this year reveal that catabolic loss of nitrogen can be diminished even in moderately severe trauma by adequate supply of intravenous amino acids and calories. Absorption of oral foodstuffs was analyzed in a group of patients who had had all or part of the stomach removed months or years earlier, and in others who had had partial intestinal resection for inflammatory or vascular disease processes. Metabolic studies were also conducted in patients receiving chemotherapy for advanced malignant neoplasms. The changes in body composition detected in these preliminary observations have stimulated an extension of the project.

Dr. Gilder, assisted by Dr. Moody, has been investigating a spirolactone which is an aldosterone antagonist. This compound has a direct effect upon gastric mucosa secretion as well as upon renal function. This is of particular interest because there are indications that the adrenal glands affect the secretory cells of the stomach, and the above finding may contribute to elucidation of steroid action upon gastric function.

Neurosurgical Research

Dr. R. H. Patterson, Jr. has instituted an adaptation of deep hypothermia with cardioplegia for neurosurgical procedures. The method

utilizes extracorporeal circulation with a heat exchanger. It has been possible to obtain body temperatures of 5° to 10° in 30 to 45 minutes of perfusion. The resultant cardioplegia permits turning off the pump for a period during which intracranial operations can be performed without troublesome bleeding. The method does not require thoracotomy. Ventricular fibrillation at the time of warming has been circumvented by antazoline, which reduces the electrical irritability of the myocardium.

Urologic Research

Under the direction of Dr. John W. Draper, renal blood flow and the characteristics of renal interstitial (pulp) pressures have been studied. Intrarenal pulp pressures have been correlated with those of the renal artery and vein. Dr. Draper, Dr. Stuart Silver, and Dr. Sastre have demonstrated that pulp pressure varying from 8 to 18 mms. of Hg correlates best with venous pressure. Simultaneous recordings from different sites within the kidney substance suggest transmitted intrarenal pressures and possibly limited collateral circulation. Renal arteriography via aortic catheters has shown anatomical variations, flow rates, and arterial constrictions. In collaboration with Dr. Goldsmith, Dr. Draper has used the thermoregulator system with thermistors to determine the rate and patterns of renal blood flow.

Returned in 1960 for histopathologic studies was a group of animals which in 1958 and 1959 had undergone surgical creation of bilateral ulnar defects, with unilateral autografting of gallbladder and urinary bladder mucosa. The foreleg specimens exhibited an excessive osteogenetic response where epithelium of the genito-urinary tract has been inserted.

Miscellaneous Studies

The Biochemistry Unit performs three to five blood volume determinations daily. Analysis of 24 hour collections of urine for electrolyte content has been performed with greater frequency than in 1959. The research dietitian has given advice on nutritional problems to patients in the Gastrectomy Clinic and the hospital. In addition, malnourished patients have received special metabolic formula feedings to supplement other measures for body repletion.

For the Department of Pharmacology the laboratory staff has produced experimental heart block. Experimental pancreatectomy has been carried out for members of the Department of Medicine who are studying experimental arteriosclerosis. New sutures, antiseptics, hemostatic agents, and other materials have been tested and screened prior to clinical trial.

ORAL SURGERY

Dr. George F. Egan, Attending Oral Surgeon in Charge

A three year residency in Oral Surgery embracing the required basic science courses has been inaugurated. The didactic portion of the program is integrated with clinical practice in the second and third year. This differs from the usual program wherein the year of didactic training is devoid of clinical experience and isolated from the hospital environs. The oral surgery training is supplemented by rotation through Anesthesiology, General Surgery, and Surgical Pathology, plus several hours a week of classroom work in basic sciences on a graduate level in Cornell University Medical College. This new approach to graduate training in oral surgery is being evaluated by the American Dental Association.

In conjunction with the First District Dental Society, two courses were given: "Diagnosis and Principles of Oral Surgery" and "Implantation of Magnets in the Jaw."

A maxillofacial prosthetic group has joined the attending staff to augment the oral surgery and cleft palate programs. This meets the need for construction of intricate prosthetic appliances, particularly in the total care and rehabilitation of patients who undergo extensive maxillofacial operations.

OUTPATIENT DEPARTMENT

Dr. S. W. Moore, Attending Surgeon in Charge

The Surgical Outpatient Department consists of 14 clinics and is conducted in close cooperation with all other outpatient facilities. We have become apprehensive about the diminishing number of surgical patients during recent years and the marked increase in charges to the patients using outpatient facilities.

Patient visits in surgery dropped from 76,061 in 1955 to 70,970 in 1960, a loss of 5,091 visits or 6.7 per cent. During the same five year period, the number of new patients decreased from 5,617 to 5,065, a loss of 552 new patients or 10 per cent. Effective January 1, 1961, the charge for clinic visits is $4 for patients with an "A" rating, an increase of 33 per cent. During 1959 the total hospital expense per patient visit was $7.99.

During the last five year period for which figures are available, 1954 to 1959, the net loss per visit for a surgical outpatient has risen from $3.13 to $5.14, an increase of $2.01 or 64 per cent.

Costs per patient visit have mounted as follows:

	1954	*1959*	*Amount of Increase*	
Medical care	$ .47	$ .59	$.12	26%
Nursing care	1.15	2.07	.92	80
Administration of nursing care	.07	.23	.16	228
Medical supplies	.26	.51	.25	96

The combined cost increase of $1.17 ($.92 and $.25) for nursing care and medical supplies accounts for 58 per cent of the net loss increase of $2.01 per visit. The present cost of medical supplies is 86 per cent of the cost of medical care, $.51 to $.59. Nursing care costs 351 per cent more than medical care, $2.07 to $.59. The administration of nursing care costs 39 per cent as much as the total cost of medical care, $.23 to $.59.

The total costs of surgical care in the Surgical Outpatient Department have increased during the same five year period, 1954 to 1959, as follows:

	1954	*1959*	*Amount of Increase*	
Medical care	$31,779	$ 37,620	$ 5,841	18%
Nursing care	77,691	132,755	55,064	70
Administration of nursing care	4,941	15,030	10,089	204
Medical supplies	17,255	33,093	15,838	92

The Surgical Service depends heavily upon clinic patients to fill the inpatient beds. One fears the recent increase in rates may drive these patients away from our doors. It is therefore imperative that these costs be carefully studied.

Nerve Block Clinic

For three years the Department of Anesthesiology has provided for outpatients the services of a Nerve Block Clinic on a referral basis. Various types of pain problems are referred for therapy. Patients are seen by appointment by an anesthesiologist who, after appropriate investigation, performs a diagnostic or therapeutic nerve block. The clinic is supervised by Dr. Francis M. Tiers.

Ophthalmology

In the Ophthalmology Clinic Dr. Galin, Dr. Aizawa, Dr Nano, and Dr. McLean have continued their studies on intraocular fluid balance, intraocular fluid flow, and intraocular pressure relationships.

Dr. Gordon's Low Vision Clinic continues to serve the near blind who cannot be aided by medical or surgical means.

The year has further cemented our mutually beneficial relationship with the Memorial Center. Dr. Taylor, with assistant residents in six month rotation, now makes regular rounds on patients in Ewing and Memorial Hospital wards and attends their Head and Neck Clinic.

Under a grant from the Cerebral Palsy Foundation, Dr. Dunlap has been investigating ocular muscle problems in cerebral palsy. A large volume of material has been obtained from the Cerebral Palsy Center on Long Island and the Cerebral Palsy Clinic of the Hospital for Special Surgery. This is the first such comprehensive study and it offers new hope for visual rehabilitation of children handicapped by this disease.

Otolaryngology

In Otolaryngology a library and instruction room has been instituted, with standard texts and reference books in the specialty. Teaching models, including illuminated temporal bones, have been obtained.

The program for hard-of-hearing children continues in cooperation with the State of New York Department of Health, Bureau of Medical Rehabilitation, and Bureau for Handicapped Children.

Plastic Surgery

In 1960, patient visits to the Plastic Surgery Clinic numbered 1,579—a drop of 380 from the previous year's total of 1,959. This decrease allowed the resident staff to do clinical investigation during the dispensary sessions. Included were electromyographic tests of pedicled tissue, and volumetric tests on augmentation breastplasty in which silicone or etheron sponges were used. Thus far Dr. George Dietz has demonstrated that there is progressive diminution in the size of the prosthesis.

The resident staff of Plastic Surgery has cooperated with the Emergency Unit staff in response to calls for assistance with facial lacerations. Ninety-seven such cases were cared for in 1960.

Urology

The Urology Outpatient Clinic continues to be active. A new cystoscopic and radiographic examining table, electrically motorized, has been installed, with an additional darkroom necessitated by the steady increase in radiographic examinations.

A study on the radio-Diodrast renogram has been partially completed, with Dr. Evans and Dr. Poker of the Department of Radiology. The project is being continued using radio-Hippuran. At present it does not appear that the method will be of great practical value.

With the aid of Dr. Peter Dineen and his laboratory staff, methods of sterilizing optical urologic instruments have been investigated, including formaldehyde cabinets and solutions for soaking instruments.

Emergency Unit

On January 1, 1961, the Emergency Unit occupied part of the completed portion of the Dr. Connie Guion Building. This greatly expands the facilities for treatment of patients with emergent conditions. When renovation of the old Emergency Unit is completed, in the latter part of 1961, it will become part of the new unit.

In the new building facilities for roentgen ray examination are immediately adjacent to the Emergency Unit, resulting in a considerable saving of time. The unit has 12 observation beds which may be used by patients for 24 hours pending disposition.

During 1960 Dr. Skudder completed studies on reactions to tetanus antitoxin and the immediate managment of 100 victims of trauma admitted to the hospital.

Despite marked reduction in operating space, with construction on the Dr. Connie Guion Building, registrations reached an all-time high of 21,971 compared with the previous maximum of 20,845 in 1950. This represents an increase of 5.4 per cent. Surgery, including fractures, accounted for 43 per cent; Medicine for 24 per cent; and other services for 33 per cent of all registrations.

Admitted to inpatient facilities from the Emergency Unit was a total of 2,762 patients, representing 12 per cent of registrations. Surgery, including fractures, accounted for 35 per cent of these admissions; Medicine for 42 per cent; and other services for 23 per cent. Twenty-six per cent of registrations and 17 per cent of admissions were for patients with traumatic injuries.

The New York Hospital Emergency Unit Manual was completed and distributed to the house staff assigned to the unit.

Patients transferred from other hospitals to The New York Hospital by way of the Emergency Unit numbered 128, an increase of 9 per cent over the 1959 figure.

Surgical Follow-Up Clinic

The Surgical Follow-Up Clinic is again fortunate in having the same full-time workers. Mrs. DeFranco is in charge, assisted by Mrs. Coleman and Mrs. McDermott. All material is up to date, with 9,168 patients currently being followed. During the year 544 cases were closed, including deaths, and 1,058 new cases were added. This shows an increase of 514 in the total of patients being followed.

With the opening of the Pediatric Surgical Unit a program was initiated

whereby all pediatric surgical patients are picked up and followed according to the usual procedure. At the close of 1960 there were 41 such patients.

Fracture

The Fracture Outpatient Clinic has been well attended, with a senior surgeon as well as resident staff present at each of the four weekly sessions. Special effort is made to show to medical students fractures in the early stages of treatment. Most students in the 1960 group were able to witness or take part in the reduction of a fresh fracture.

The Sunday Follow-Up Clinics continue, and 5 by 7 reproductions of all X-rays are placed in each patient's fracture envelope. These records are most valuable in clinical research.

Pediatric Surgery

The Pediatric Surgery Clinic, supervised by residents, meets twice weekly. During 1960 approximately 300 patients were seen. These were children who had undergone surgery and returned for early follow-up. A late Pediatric Surgery Follow-Up Clinic is held once a month in conjunction with the General Surgery Follow-Up Clinics. Preliminary surgical evaluation of pediatric patients is done on a consultation basis by one of the pediatric surgical residents on call to the General Pediatric Clinic.

Pediatric surgical outpatients who require minor procedures are managed in Minor Surgery Clinic and later followed in Pediatric Surgery Clinic. Children who arrive at the hospital with surgical problems after clinic hours, or with emergent conditions, are seen by the senior pediatric surgical resident in the Emergency Unit.

SPECIAL GRANTS AND DONATIONS FOR SURGICAL RESEARCH

U. S. Public Health Service:	
General Surgery	$ 38,717.00
Surgical Metabolism	23,048.00
Ophthalmology	12,696.00
Department of the Army—Surgical Bacteriology	36,000.00
New York Heart Association	26,996.50
Vincent Astor Foundation:	
General Surgery	41,145.00
Plastic Surgery	7,000.00
Schiff Foundation—General Surgery	30,000.00
Anne Parrish Titzell Fund	14,000.00
Anonymous—General Surgery	12,099.98
Anonymous—Cardiovascular Research	10,000.00
Lillia Babbitt Hyde Foundation—Surgical Metabolism	10,000.00
Schieffelin & Co.—Pharmaceutical Research	9,000.00
Dr. Frederick L. Liebolt—Orthopedic Surgery	8,000.00
Health Research, Inc.—Cancer Research	6,721.00
Deafness Research Foundation—Otolaryngology	6,500.00
United Cerebral Palsy Foundation—Ophthalmology	6,250.00
James Foundation of New York, Inc.—Cardiovascular Research	6,000.00

National Society for Prevention of Blindness—Ophthalmology	$ 6,000.00
Edwin J. Hoffritz Foundation—Ophthalmology	5,000.00
Mrs. George E. Vigouroux—Cardiovascular Research	5,000.00
Organon, Inc.—Surgical Metabolism	5,000.00
Charles A. Frucauff Foundation—Cardiovascular Research	5,000.00
Merck Sharp & Dohme—Ophthalmology	5,000.00
Abbott Laboratories—Anesthesiology	5,000.00
Anonymous in memory of Dr. Lisle Kingery—Urology	5,000.00
Anonymous—Surgical Bacteriology	4,400.00
Mr. and Mrs. Frank Greenwall—Cardiovascular Research	3,383.44
National Council to Combat Blindness—Ophthalmology	3,190.00
Margolyes League—Ophthalmology	3,000.00
Lasdon Foundation—Urology	2,500.00
B. C. Gamble Charitable Trust—Orthopedic Surgery	2,500.00
P. W. Skogmo Charitable Trust—Orthopedic Surgery	2,500.00
Mr. and Mrs. Edward H. Little—Biliary Tract Research	2,500.00
Mr. and Mrs. Rudy C. Stiefel—Trauma	2,050.64
John E. McAuliffe—Urology	2,000.00
Mrs. Cyrus McCormick—Otolaryngology	2,000.00
Johnson & Johnson—Surgical Bacteriology	1,500.00
In memory of George E. Simons—Cancer Research	1,482.00
Mrs. Frederick W. Howe—Cancer Research	1,000.00
Buffalo Foundation:	
Trauma	500.00
Plastic Surgery	500.00
Mr. and Mrs. Robert L. Werner—Biliary Tract Research	1,000.00
Louis M. Loeb:	
Cardiovascular Research	500.00
Biliary Tract Research	500.00
General Tire & Rubber Co.—Plastic Surgery	1,000.00
Victor Emanuel—Plastic Surgery	1,000.00
Mrs. Philip L. James—Gastric Physiology	1,000.00
In memory of Romeo Petronio—Cancer Research	775.00
Mr. and Mrs. Louis Resnick—Plastic Surgery	750.00
Mrs. Christina Aybar—Otolaryngology	750.00
Miscellaneous for Mary Goodhue Blair Cancer Fund—Neurosurgery	713.00
Harder Foundation—Urology	630.55
Dr. Preston A. Wade—Trauma	600.00
Monroe Arons—Cardiovascular Research	504.23
Henry S. Sturgis—Biliary Tract Research	500.00
Capt. and Mrs. Trevor Kenyon—Biliary Tract Research	500.00
Dr. John A. Kelly—Cardiovascular Research	500.00
Louis E. Walker—Neurosurgery	500.00
Mrs. Marie Zimmerman—Ophthalmology	500.00
Lever Brothers Co.—Surgical Bacteriology	500.00
Archibald J. Edge—Urology	500.00
Daniel Dowd—Ophthalmology	500.00
Dr. S. Muriel Baron—Cardiac Research	500.00
In memory of John Swietlik—Cancer Research	500.00
Miscellaneous:	
Glaucoma Research	2,910.00
Otolaryngology	1,685.00
Urology	676.80
Animal Care	500.00
Biliary Tract Research	470.00
Oral Surgery Research	300.00
Cardiac Research	125.00
Neurosurgery	100.00
Trauma	25.00
Total	$401,694.14

GENERAL COMMENTS

A decade is not long, but during the one that ended with 1959, many developments took place in surgery. Essentially, surgery extended its areas of therapy and participated more frequently than ever before in diagnostic procedures. Also it could be said that never before had the risk of surgery been less, the results better, or procedures rendered easier for the patient to endure. Throughout the nation surgical facilities were more available to the people, regardless of where they lived. As we begin the next decade with 1960, it is evident that this trend will continue and that we will soon be lacking the trained personnel to provide what surgery has to offer in the field of health. Even if the only factor were the increase in population, this statement would remain true, but in addition scientific research advancements and developments are being projected into clinical utilization more rapidly than in the past. Those of us who have observed progress in surgery over the last half century are well aware of the increasing tempo.

It is likely, however, that advances in the near future may take place with explosive suddenness. Changes that would result from such discoveries as those reported by the Nobel Prize winners Medawar and Burnet could in a sense overwhelm the surgeons of today. One needs only to contemplate briefly what would be entailed in the day's work in the operating rooms of our hospitals if it were practical to control temporarily the immune response of the host to transplanted tissue. If excisional surgery were followed routinely by replacement, the technical burden added would be considerable. Then also, for a time at least, there might be new postoperative complications requiring additional effort.

Of course we have no way of knowing when this may take place. It may be years, but it could become reality in a matter of months. When it does, the application and the utilization for our people will depend more upon the trained surgeon than upon physical facilities or technical personnel. Within the training program of our teaching medical centers rests the opportunity to render the greatest service to the future.

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John M. Beal, M.D.

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CLASSIFICATION OF OPERATIONS
(PAVILION)

Department of Surgery

Flaps, Grafts

Split thickness graft	52
Full thickness graft	25
Preparation of pedicle or tube	22
Cutting of pedicle or tube	14
Bone graft other than for fracture	4
Cartilage graft	3
Pinch graft	1
Composite graft	1
	122

Skin, Subcutaneous Tissue

Local excision of lesion of subcutaneous tissue	74
Local excision of lesion of skin	57
Repair of skin without graft	45
Incision and drainage of subcutaneous abscess	37
Exploration of wound	15
Wide excision of lesion of subcutaneous tissue	11
Plastic operation on skin	10
Debridement of lesion of skin	10
Secondary suture of wound	9
Tattoo of lesion of skin	7
Excision of skin and subcutaneous tissue with graft	4
Excision of pilonidal sinus	3
Marsupialization of pilonidal sinus	3
Biopsy of skin or subcutaneous tissue	2
	287

Breast

Local excision of lesion of breast	93
Radical mastectomy	42
Biopsy of breast	12
Mastoplasty	8
Mastotomy	3
Complete (simple) mastectomy	3
	161

Bones, Joints, Bursas

Closed reduction of fracture	110
Open reduction of fracture	32
Removal of foreign body in bone	11
Local excision of lesion of bone	6
Biopsy of bone or bone lesion	6
Insertion of traction device	6
Drainage of bone	3
Partial ostectomy	3
Osteotomy	2
Osteoplasty	2
Operation for nonunion of fracture	2
Exploration of bone	1
Complete ostectomy	1
Spinal fusion	1
Arthroplasty	19
Arthrotomy	4
Excision of ligament	1
Open reduction of dislocation	1
Closed reduction of dislocation	1
Excision of bursa	4
	216

Muscles, Tendons, Fascia

Myectomy (including biopsy)	38
Myotomy	1
Suture of muscle	1
Ganglionectomy	15
Suture of tendon	6
Tenoplasty	5
Exploration of tendon	2
Tenotomy	1
Fasciotomy	1
Fasciectomy	1
Suture of fascia	1
	72

Extremities

Amputation of leg	24
Amputation of toe(s)	16
Incision and drainage of infection of hand	6
Repair of syndactylia	5
Incision and drainage of infection of foot	2
Amputation of finger(s)	2
	55

Nose, Nasopharynx

Septectomy: submucous resection	26
Rhinoplasty	23
Reduction of fracture of nose	15
Incision and drainage of abscess of nose	2
Correction of choanal atresia	1
Suture of nose	1
	68

ACCESSORY SINUSES

Excision of lesion of accessory sinus	15
Radical sinusotomy	8
Ethmoidectomy	1
Closure of oral fistula of maxillary sinus	1
	25

LARYNX, TRACHEA, BRONCHI

Complete (total) laryngectomy	2
Laryngoplasty	2
Partial laryngectomy	1
Arytenoidectomy	1
Laryngoscopy	1
Tracheotomy, tracheostomy	49
Suture of trachea	1
Closure of tracheo-esophageal fistula	1
Bronchoscopy	5
	63

LUNG, PLEURA, MEDIASTINUM

Thoracotomy with exploration	9
Thoracotomy with closed drainage	4
Thoracotomy with open drainage	3
Thoracoplasty	1
Complete (total) lobectomy	20
Complete (total) pneumonectomy	9
Partial lobectomy	6
Biopsy of lung	2
Local excision of lesion of lung (by pneumonotomy)	1
Insertion of chest catheter for pneumothorax	4
Mediastinotomy with excision of lesion	3
Mediastinotomy	2
	64

HEART, PERICARDIUM

Mitral valvulotomy	32
Aortic valvulotomy	4
Pulmonary valvulotomy	4
Closure of atrial septal defect	13
Closure of ventricular septal defect	6
Cardiotomy with exploration	2
Correction of tetralogy of Fallot	2
Correction of anomalous pulmonary venous drainage	1
Aortic valvuloplasty	1
Cardiac massage	13
Pericardiectomy (including biopsy of pericardium)	2
	80

ARTERIES, VEINS

Cerebral angiography	75
Arteriography	23
Arteriotomy with bypass graft	11
Arterial embolectomy or thrombectomy	11
Arterial anastomosis	11
Excision of arterial aneurysm with graft	8
Aneurysmorrhaphy, intracranial	5
Arteriotomy	3
Suture of artery	3
Ligation of artery	3
Ligation of artery, cervical	3
Excision of arterial aneurysm	2
Excision of arteriovenous fistula	2
Ligation of artery, intracranial	1
Exploration of arterial graft	1
Pulmonary arterial banding	1
Transection of patent ductus arteriosus	8
Ligation of patent ductus arteriosus	2
Aortography	12
Aortotomy	1
Excision of coarctation of aorta	1
Phlebectomy	54
Venous anastomosis	8
Venography	8
Venography, dural sinus	2
Catheterization of vein	2
	261

SPLEEN, LYMPHATIC SYSTEM

Splenectomy	19
Splenography	1
Local excision of lymph nodes	64
Biopsy of lymph node	52
Radical excision of lymph nodes	9
Excision of lesion of lymphatic channel	7
Incision and drainage of lymph nodes	1
	153

ORAL CAVITY, SALIVARY GLANDS

Cheiloplasty (including cleft lip)	10
Stomatoplasty	6
Local excision of lesion of mouth or lip	4

Biopsy of mouth or lip	3
Implantation of radioactive substance in mouth	2
Removal of radioactive substance in mouth	2
Partial glossectomy	2
Biopsy of tongue	1
Simple extraction of tooth	39
Surgical removal of tooth	1
Suture of gum	1
Palatoplasty (including cleft palate)	19
Excision of lesion of salivary gland	5
Excision of salivary gland	1
	96

PHARYNX, ADENOIDS, TONSILS

Tonsillectomy, alone or with adenoidectomy	209
Adenoidectomy alone	18
Local excision of lesion of pharynx	1
	228

ESOPHAGUS

Esophagoscopy	5
Esophagogastrectomy	3
Esophageal bypass with colonic replacement	3
Esophagomyotomy	2
Esophagogastrostomy	2
Esophagoesophagostomy	2
Local excision of lesion of esophagus	1
Esophagectomy	1
Esophagostomy, cervical	1
Dilation of esophagus	1
	21

STOMACH

Partial (subtotal) gastrectomy	96
Gastrostomy	17
Gastroenterostomy	10
Suture of stomach	10
Complete (total) gastrectomy	8
Local excision of lesion of stomach	3
Gastrotomy	1
Pyloromyotomy	9
Pyloroplasty	2
	156

SMALL BOWEL

Resection of small bowel	24
Lysis of adhesions	9
Enterostomy	3
Enterocnterostomy	3
Local excision of lesion of small bowel	2
Exteriorization of small bowel	1
Reduction of intussusception	1
Reduction of volvulus	1
Plication of perforated duodenal ulcer	1
	45

LARGE BOWEL

Colostomy (including revision)	29
Descending or sigmoid colectomy	21
Ascending colectomy	13
Local excision of lesion of large bowel	11
Closure of colostomy	7
Partial (subtotal) colectomy	5
Complete (total) colectomy	3
Transverse colectomy	1
Lysis of adhesions	1
	91

APPENDIX

Appendectomy for acute appendicitis	59
Appendectomy for chronic appendicitis	25
Appendectomy (for either) with drainage	19
Incision and drainage of appendiceal abscess	3
	106

RECTUM, ANUS

Hemorrhoidectomy	29
Local excision of lesion of rectum or anus	20
Abdominoperineal coloproctectomy	16
Anal fistulectomy	8
Incision and drainage of perirectal or perianal abscess	7
Proctoscopy with removal of foreign body	1
Reduction of prolapse of rectum	1
Dilation of anal sphincter	1
	83

LIVER, BILIARY TRACT, PANCREAS

Hepatotomy with exploration	7
Biopsy of liver	7
Cholecystectomy for chronic disease	117
Cholecystectomy for acute disease	27
Cholecystectomy (for either) and choledochotomy	17

Operative cholangiography	12
Cholecystoenterostomy	6
Cholecystostomy	5
Choledochotomy with exploration	20
Excision of cystic duct and/or gallbladder remnant	2
Incision of sphincter of Oddi	1
Choledochoplasty	1
Radical pancreatoduodenectomy	3
Complete (total) pancreatectomy	1
Partial pancreatectomy	1
	227

Abdomen, Peritoneum, Omentum

Exploratory laparotomy	28
Biopsy of peritoneum	19
Incision and drainage of intra-abdominal abscess	7
Secondary closure of wound of abdominal wall	4
Incision and removal of foreign body in peritoneal cavity	1
Excision of lesion of peritoneum	1
Omentectomy	1
Inguinal hernia repair	190
Ventral or incisional hernia repair	33
Umbilical hernia repair	30
Fermoral hernia repair	12
Diaphragmatic or esophageal hiatal hernia repair	9
Epigastric hernia repair	6
	341

Kidney, Renal Pelvis

Nephrectomy	24
Nephrostomy	13
Decapsulation of renal cyst	9
Pyeloplasty	7
Pyelotomy	5
Nephrolithotomy	5
Incision and drainage of perirenal abscess	2
Nephrotomy with exploration	1
Ileopyelostomy	1
	67

Ureter

Ureterotomy	19
Reimplantation of ureter into bladder	9
Ureterostomy	8
Ureterosigmoidostomy	7
Construction of ileal conduit	7
Partial ureterectomy	1
Fulguration of uretercele	1
	52

Bladder, Urethra

Local excision of lesion of bladder	60
Cystotomy, cystostomy	30
Cystoscopy (4 with biopsy)	15
Cystoplasty	14
Partial cystectomy	6
Complete (total) cystectomy	6
Cystotomy with removal of foreign body	3
Closure of exstrophy of bladder	2
Litholapaxy	2
Closure of fistula of bladder	2
Incision and drainage of perivesical tissues and/or space	1
Operation of urethra	20
Incision and drainage of periurethral abscess	2
	163

Male Genital System

Plastic operation on penis	21
Circumcision	17
Biopsy of penis	2
Incision of penis	1
Amputation of penis	1
Orchiectomy	23
Orchiopexy	20
Excision of lesion of testis	14
Biopsy of testis	1
Anastomosis of vas deferens	41
Local excision of lesion of scrotum	3
Transurethral electroresection of prostate	93
Retropubic prostatectomy, simple	15
Suprapubic prostatectomy	4
Biopsy of prostate	4
Perineal prostatectomy, simple	3
	263

Female Genital System

Oophorectomy	3
Control of bleeding from ovary	2
Pelvic evisceration	2
Biopsy of vagina	1
Hysteromyomectomy	1
Pan hysterectomy	1
	10

Endocrine System

Partial thyroidectomy for nontoxic condition	50
Partial thyroidectomy for toxic condition	5
Thyroidotomy	2
Reopening thyroid wound for control of hemorrhage	1

Complete (total) hypophysectomy	21
Excision of tumor of pituitary gland	4
Adrenalectomy	4
	87

SKULL, BRAIN, MENINGES

Removal of infected bone plate or prosthesis	4
Excision or biopsy of skull tumor	4
Subtemporal decompression	2
Craniectomy	2
Cranioplasty	2
Suboccipital decompression	1
Open reduction of skull fracture	1
Pneumoencephalography	53
Ventriculography	22
Dye test for hydrocephalus	5
Removal or biopsy of brain tumor	28
Ventriculoperitoneal anastomosis	5
Ventriculostomy	4
Ventriculocisternostomy	3
Exploration of brain for other than tumor	2
Removal of ventricular shunt tube	2
Local excision of lesion of brain	1
Evacuation of hematoma of brain	1
Ventriculoventriculostomy	1
Drainage of meningeal hematoma	8
Exploration of meninges, negative findings	4
Repair of meningeal defect	2
Excision of spinal meningocele	1
Excision of meningomyelocele	1
	159

SPINAL CORD, NERVE ROOTS

Myelography	34
Excision of intraspinal tumor	10
Excision of herniated nucleus pulposus, lumbar	8
Chordotomy	5
Injection of alcohol, intrathecal	5
Decompression of cervical cord, spondylosis	4
Excision of lesion of spinal cord	2
Subarachnoid-peritoneal anastomosis	2
Rhizotomy	1
Decompression of irremovable spinal cord tumor	1
	72

NERVES

Sympathectomy for other than hypertension	27
Anastomosis of nerve	4
Vagotomy	3
Excision of lesion of nerve	3
Retrogasserian neurotomy	2
Neurolysis	1
Sympathectomy for hypertension	1
	41

EAR

Moblization of stapes	19
Ear construction (any stage)	17
Otoplasty, unilateral or bilateral	14
Myringotomy	5
Myringoplasty	5
Local excision of lesion of external ear	4
Intubation of middle ear	4
Radical mastoidectomy	1
Modified radical mastoidectomy	1
	70

EYE

Enucleation of eyeball	3
Keratocentesis	5
Air injection, anterior chamber	5
Keratoplasty	5
Suture of cornea	2
Peripheral iridectomy with cautery to sclera (Scheie)	16
Air injection with or without sclerotomy	1
Iridectomy, full or peripheral	23
Coreoplasty	3
Cyclodialysis	3
Repair of iris prolapse	2
Iridencleisis	2
Cyclodiathermy	1
Intracapsular lens extraction	131
Extracapsular lens extraction	22
Dislocation of lens into vitreous	1
Retinopexy	14
Ocular muscle surgery	92
Orbitotomy with exploration	1
Excision of lesion of orbit	1
Blepharoplasty	27
Blepharectomy	6
Suture of eyelid	1
Excision of lesion of conjunctiva	14
Flap operation of conjunctiva	3
Biopsy of conjunctiva	1
Dacryocystorhinostomy	3
Conjunctivodacryocystostomy	1
	389

TOTAL PAVILION OPERATIONS	4,394

CLASSIFICATION OF OPERATIONS
(PRIVATE)

Department of Surgery

Flaps, Grafts	
Split thickness graft	40
Cutting of pedicle or tube	18
Preparation of pedicle or tube	15
Full thickness graft	12
Cartilage graft	9
Bone graft other than for fracture	8
Pinch graft	7
Composite graft	6
	115
Skin, Subcutaneous Tissue	
Local excision of lesion of subcutaneous tissue	129
Local excision of lesion of skin	114
Repair of skin without graft	59
Incision and drainage of subcutaneous abscess	40
Plastic operation on skin	39
Tattoo of lesion of skin	22
Wide excision of lesion of subcutaneous tissue	15
Excision of pilonidal sinus	13
Marsupialization of pilonidal sinus	11
Exploration of wound	8
Secondary suture of wound	7
Biopsy of skin or subcutaneous tissue	6
Incision and drainage of lesion of skin	5
Excision of skin and subcutaneous tissue with graft	4
Debridement of lesion of skin	4
Partial excision of nail	2
Insertion of prosthesis into subcutaneous tissue	1
	479
Breast	
Local excision of lesion of breast	177
Radical mastectomy	68
Mastoplasty	14
Complete (simple) mastectomy	8
Biopsy of breast	7
Excision of gynecomastia	3
Mastotomy	1
	278
Bones, Joints, Bursas	
Closed reduction of fracture	51
Open reduction of fracture	20
Removal of foreign body in bone	17
Local excision of lesion of bone	16
Osteotomy	11
Biopsy of bone or bone lesion	11
Drainage of bone	6
Partial ostectomy	6
Osteoplasty	4
Insertion of traction device	4
Complete ostectomy	2
Operation for nonunion of fracture	2
Bone graft for fracture	1
Spinal fusion	1
Arthrotomy	10
Arthroplasty	6
Excision of semilunar cartilage, knee joint	4
Closed reduction of dislocation	3
Excision of ligament	1
Arthrodesis	1
Open reduction of dislocation	1
Manipulation of joint	1
Excision of bursa	5
Incision and removal of calcareous deposit in bursa	4
	188
Muscles, Tendons, Fascia	
Myectomy (including biopsy)	22
Myotomy	3
Local excision of lesion of muscle	1
Ganglionectomy	16
Tenoplasty	12
Excision of lesion of tendon	6
Suture of tendon	3
Exploration of tendon	2
Tenotomy	2
Tenosynovectomy	2
Transposition of tendon	2
Fasciectomy	7
Fasciotomy	2
	80
Extremities	
Amputation of leg	20
Amputation of finger(s)	12
Amputation of toe(s)	11
Incision and drainage of infection of hand	8
Incision and drainage of infection of foot	5
Repair of syndactylia	2
	58

Nose, Nasopharynx	
Rhinoplasty	65
Septectomy: submucous resection	59
Reduction of fracture of nose	6
Excision of lesion of nose	4
Turbinectomy	3
Nasopharyngoscopy	1
	138
Accessory Sinuses	
Excision of lesion of accessory sinus	36
Radical sinusotomy	5
Ethmoidectomy	2
Simple sinusotomy	1
Radical excision of accessory sinus	1
	45
Larynx, Trachea, Bronchi	
Laryngoscopy	16
Complete (total) laryngectomy	3
Tracheotomy, tracheostomy	25
Bronchoscopy	2
	46
Lung, Pleura, Mediastinum	
Thoracotomy with exploration	15
Thoracotomy with closed drainage	3
Thoracotomy with open drainage	3
Thoracoplasty	2
Complete (total) lobectomy	30
Partial lobectomy	10
Complete (total) pneumonectomy	9
Local excision of lesion of lung (by pneumonotomy)	4
Biopsy of lung	1
Pleurectomy	3
Biopsy of pleura	3
Insertion of chest catheter for pneumothorax	2
Mediastinotomy with excision of lesion	5
Mediastinotomy	1
	91
Heart, Pericardium	
Mitral valvulotomy	32
Aortic valvulotomy	4
Pulmonary valvulotomy	3
Closure of atrial septal defect	4
Closure of ventricular septal defect	1
Cardiotomy with exploration	1
Cardiac massage	14
Pericardiectomy	3
Pericardiocentesis	1
	63
Arteries, Veins	
Cerebral angiography	103
Excision of arterial aneurysm with graft	12
Arterial embolectomy or thrombectomy	12
Arteriotomy	10
Aneurysmorrhaphy	8
Arteriotomy with bypass graft	6
Arteriography	6
Arterial anastomosis	5
Arteriectomy	3
Ligation of artery	3
Excision of arterial aneurysm	2
Arterioplasty	2
Suture of artery	2
Ligation of artery, intracranial	2
Ligation of artery, cervical	2
Excision of arteriovenous fistula	1
Suture of arterial aneurysm	1
Ligation of patent ductus arteriosus	6
Transection of patent ductus arteriosus	2
Aortography	4
Excision of coarctation of aorta	1
Excision of coarctation of aorta with graft	1
Phlebectomy	93
Venous anastomosis	6
Ligation of vein	4
Exploration of vein without incision	1
	298
Spleen, Lymphatic System	
Splenectomy	10
Splenography	4
Biopsy of lymph node	62
Local excision of lymph nodes	28
Radical excision of lymph nodes	17
Excision of lesion of lymphatic channel	3
	124

Oral Cavity, Salivary Glands

Cheiloplasty (including cleft lip)	11
Wide excision of malignant neoplasm of lip	3
Biopsy of mouth or lip	3
Local excision of lesion of mouth or lip	2
Stomatoplasty	2
Repair of rhino-oral fistula	2
Partial glossectomy	2
Glossoplasty	1
Simple extraction of tooth	10
Surgical removal of tooth	6
Gingivectomy	1
Palatoplasty (including cleft palate)	19
Biopsy of palate	1
Excision of lesion of salivary gland	12
Excision of salivary gland	3
Sialolithotomy	3
	81

Pharynx, Adenoids, Tonsils

Tonsillectomy, alone or with adenoidectomy	333
Adenoidectomy alone	13
Incision and drainage of retropharyngeal abscess	1
Ligation of tonsillar bleeding	1
	348

Esophagus

Esophagogastrectomy	5
Esophagomyotomy	4
Esophagectomy	2
Esophagogastrostomy	2
Esophageal bypass with colonic replacement	2
Local excision of esophageal diverticulum	1
Esophagoscopy	1
Esophagojejunostomy	1
Esophagoesophagostomy	1
Dilation of esophagus	1
	20

Stomach

Partial (subtotal) gastrectomy	118
Gastroenterostomy	20
Complete (total) gastrectomy	8
Gastrostomy	8
Gastrotomy	5
Suture of stomach	5
Local excision of lesion of stomach	3
Closure of gastroenteric fistula	2
Pyloromyotomy	2
	171

Small Bowel

Resection of small bowel	23
Lysis of adhesions	20
Enteroenterostomy	13
Enterotomy with or without removal of foreign body	4
Enterostomy	3
Closure of enteric fistula	3
Local excision of lesion of small bowel	2
Excision of small bowel diverticulum	1
Reduction of volvulus	1
	70

Large Bowel

Descending or sigmoid colectomy	57
Local excision of lesion of large bowel	37
Colostomy (including revision)	31
Ascending colectomy	23
Closure of colostomy	17
Transverse colectomy	8
Complete (total) colectomy	4
Partial (subtotal) colectomy	2
Reduction of volvulus	2
Lysis of adhesions	2
Multiple colotomies	1
Reduction of intussusception	1
Suture of large bowel	1
Ligation of colonic mucosal bleeding point	1
Closure of colorectal fistula	1
	188

Appendix

Appendectomy for acute appendicitis	58
Appendectomy for chronic appendicitis	22
Appendectomy (for either) with drainage	8
Incision and drainage of appendiceal abscess	1
Resection of appendiceal tumor	1
	90

Rectum, Anus

Hemorrhoidectomy	87
Local excision of lesion of rectum or anus	47
Abdominoperineal coloproctectomy	27
Anal fistulectomy	27
Incision and drainage of perirectal or perianal abscess	20
Anoplasty	7
Perineal coloproctectomy	2
Reduction of prolapse of rectum	2
Suture of anus	2
Dilation of anal sphincter	2

Proctoscopy	6
Proctoscopy with biopsy	2
Proctoscopy with removal of foreign body	1
	232

LIVER, BILIARY TRACT, PANCREAS

Biopsy of liver	16
Hepatotomy with exploration	1
Marsupialization of cyst of liver	1
Cholecystectomy for chronic disease	180
Cholecystectomy for acute disease	39
Cholecystectomy (for either) and choledochotomy	38
Cholecystoenterostomy	7
Cholecystostomy	6
Choledochotomy with exploration	23
Excision of cystic duct and/or gallbladder remnant	3
Choledochectomy	2
Choledochoplasty	2
Choledochoenterostomy	1
Hepatojejunostomy	1
Closure of biliary fistula	1
Biopsy of pancreas	4
Partial pancreatectomy	2
Pancreaticocystoenterostomy	2
Radical pancreatoduodenectomy	1
	330

ABDOMEN, PERITONEUM, OMENTUM

Exploratory laparotomy	38
Biopsy of peritoneum	31
Incision and drainage of intra-abdominal abscess	8
Secondary closure of wound of abdominal wall	5
Incision and removal of foreign body in peritoneal cavity	3
Excision of lesion of peritoneum	2
Abdominal paracentesis	1
Omentectomy	1
Inguinal hernia repair	352
Ventral or incisional hernia repair	35
Diaphragmatic or esophageal hiatal hernia repair	22
Umbilical hernia repair	11
Femoral hernia repair	5
Ischiatic hernia repair	1
	515

KIDNEY, RENAL PELVIS

Pyelotomy	16
Nephrectomy	16
Nephrostomy	14
Nephrolithotomy	9
Decapsulation of renal cyst	8
Pycloplasty	6
Partial nephrectomy	5
Nephrotomy with exploration	4
Intravenous pyelography	3
	81

URETER

Ureterotomy	29
Reimplantation of ureter into bladder	15
Ureterostomy	8
Ureterosigmoidostomy	2
Construction of ileal conduit	2
Ureteroplasty	1
Ureteropyelostomy	1
	58

BLADDER, URETHRA

Local excision of lesion of bladder	72
Cystoplasty	30
Cystotomy, cystostomy	25
Cystoscopy (3 with biopsy)	19
Partial cystectomy	10
Complete (total) cystectomy	9
Cystotomy with removal of foreign body	3
Litholapaxy	2
Closure of fistula of bladder	2
Insertion of radioactive substance into bladder	1
Fulguration of bladder	1
Operation of urethra	36
	210

MALE GENITAL SYSTEM

Plastic operation on penis	21
Circumcision	8
Local excision of lesion of penis	1
Irrigation of corpora cavernosa	1
Excision of lesion of epididymis	2
Epididymectomy	1
Orchiectomy	15
Orchiopexy	14
Excision of lesion of testis	10
Biopsy of testis	1
Anastomosis of vas deferens	3
Local excision of lesion of scrotum	1
Scrotoplasty	1

Transurethral electroresection of prostate	138
Suprapubic prostatectomy	83
Retropubic prostatectomy simple	13
Perineal prostatectomy, radical	9
Biopsy of prostate	4
Perineal prostatectomy, simple	2
Prostatolithotomy	1
Retropubic prostatectomy, radical	1
	330

FEMALE GENITAL SYSTEM

Pan hysterectomy	21
Oophorectomy	11
Dilatation and curettage of uterus	7
Salpingectomy	4
Supracervical hysterectomy	4
Local excision of lesion of ovary	3
Biopsy of uterine cervix	3
Biopsy of vagina	1
Colpoplasty	1
Hysteromyomectomy	1
Local excision of lesion of cervix	1
Pelvic examination under anesthesia	1
	58

ENDOCRINE SYSTEM

Partial thyroidectomy for nontoxic condition	99
Partial thyroidectomy for toxic condition	32
Complete (total) thyroidectomy	11
Excision of thyroglossal duct cyst	5
Thyroidotomy	2
Parathyroidectomy	1
Complete (total) hypophysectomy	40
Excision of tumor of pituitary gland	8
Adrenalectomy	6
	204

SKULL, BRAIN, MENINGES

Postoperative elevation of bone plate	7
Excision or biopsy of skull tumor	4
Removal of infected bone plate or prosthesis	2
Craniectomy	2
Subtemporal decompression	1
Biopsy of skull for other than tumor	1
Cranioplasty	1
Open reduction of skull fracture	1
Pneumoencephalography	70
Ventriculography	30
Dye test for hydrocephalus	2
Removal or biopsy of brain tumor	44
Exploration of brain for other than tumor	4
Exploration of brain for unverified tumor	4
Ventriculostomy	4
Excision or drainage of brain abscess	2
Pallidotomy	2
Evacuation of hematoma of brain	1
Ventriculocisternostomy	1
Ventriculoperitoneal anastomosis	1
Drainage of meningeal hematoma	5
Exploration of meninges, negative findings	3
	192

SPINAL CORD, NERVE ROOTS

Excision of herniated nuclues pulposus, lumbar	43
Myelography	30
Excision of intraspinal tumor	12
Decompression of cervical cord, spondylosis	3
Rhizotomy	2
Decompression of cervical nerve root	2
Exploration of spinal cord for other than tumor	1
Chordotomy	1
Decompression of irremovable spinal cord tumor	1
Excision of lesion of spinal cord	1
Injection of alcohol, intrathecal	1
Subarachnoid-peritoneal anastomosis	1
	98

NERVES

Sympathectomy for other than hypertension	15
Retrogasserian neurotomy	9
Excision of lesion of nerve	7
Neurolysis	6
Neurotomy	2
Vagotomy	2
Anastomosis of nerve	2
Exploration of nerve	1
Neuroplasty	1
Thoracic sympathectomy and poudrage	1
	46

EAR

Mobilization of stapes	70
Otoplasty, unilateral or bilateral	16
Ear construction (any stage)	7
Myringotomy	6
Fenestration of fossa ovalis with vein graft	5

Intubation of middle ear	3
Local excision of lesion of external ear	2
Excision of lesion of middle ear	1
Revision of fenestration	1
Modified radical mastoidectomy	8
Radical mastoidectomy	3
	122

EYE

Enucleation of eyeball	6
Orbital implant	1
Keratoplasty	18
Suture of cornea	4
Air injection, anterior chamber	3
Keratocentesis	2
Partial keratectomy	1
Peripheral iridectomy with cautery to sclera (Scheie)	26
Air injection with or without sclerotomy	5
Sclerectomy by trephining	1
Scleroplasty	1
Iridectomy, full or peripheral	23
Cyclodialysis	5
Iridencleisis	5
Repair of iris prolapse	4
Iridotomy with transfixion of iris	3
Cyclodiathermy	2
Intracapsular lens extraction	229
Extracapsular lens extraction	26
Discission	7
Capsulectomy	1
Retinopexy	49
Ocular muscle surgery	153
Orbitotomy with exploration	1
Blepharoplasty	23
Blepharectomy	15
Suture of eyelid	1
Excision of lesion of conjunctiva	8
Flap operation of conjunctiva	4
Removal of foreign body in conjunctiva	1
Conjunctivoplasty	1
Suture of conjunctiva	1
Dacryocystorhinostomy	3
Probing of lacrimonasal duct	3
	636
TOTAL PRIVATE OPERATIONS	6,083

CLASSIFICATION OF DEATHS

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TABLE I

OPERATIVE DEATHS, GENERAL SURGERY (PAVILION)

Number	*Age*	*Primary Diagnosis*	*Operations(s)*	*Cause(s) of Death*	*Autopsy*
		DEATHS RELATED TO GASTROINTESTINAL DISEASES: 19			
750774	61	*Cancer of stomach metastatic to colon; 1 year post cerebrovascular accident due to arteriosclerosis	Total gastrectomy; splenectomy; partial pancreatectomy; transverse colectomy with jejunal interposition	Coronary occlusion	Yes
744955	74	*Cancer of stomach; arteriosclerotic heart disease; senile cataract	1. Total gastrectomy; esophagojejunostomy; splencetomy; partial pancreatectomy 2. Drainage of subhepatic abscess	Carcinomatosis	No
846951	80	*Cancer of stomach with metastases; pulmonary emphysema	Transverse colostomy	Carcinomatosis; renal failure	Yes
261827	48	*Retroperitoneal lymphosarcoma; rheumatic heart disease with mitral stenosis; diverticulitis of sigmoid flexure of colon	1. Excision lymph nodes 2. Transverse colostomy; drainage of intra-abdominal abscess 3. Excision lymph nodes	Retroperitoneal lymphosarcoma	Yes
840731	71	*Recurrent lymphosarcoma of stomach	1. Excision lymph nodes 2. Tracheostomy	Lymphosarcoma of stomach	Yes
846410	76	*Retroperitoneal lymphosarcoma metastatic to small bowel, stomach, lung; arteriosclerotic heart disease	Exploratory laparotomy; lymph node biopsy	Retroperitoneal lymphosarcoma	Yes
595566	62	Marginal ulcer of stomach	1. Total gastrectomy with jejunal interposition; cholecystostomy †2. Cardiac massage	Pseudomembranous enterocolitis, staphylococcal	Yes
801237	55	Addisonian crisis post total adrenalectomy; duodenal ulcer; hypertension; infection due to extraction of teeth	†1. Plication perforated duodenal ulcer †2. Partial gastrectomy; tracheostomy †3. Transverse colostomy †4. Plication of ulcer	Coronary occlusion	No

695374	58	Bleeding duodenal ulcer; nephrolithiasis; pyelonephritis	Partial gastrectomy	Renal failure	No
714440	72	*Ileocutaneous fistula; bleeding duodenal ulcer; 4 years post radical cystectomy for cancer	1. Resection of ileocutaneous fistula 2. Partial gastrectomy	Acute renal failure	No
842696	27	Chronic ulcerative colitis with acute perforation; generalized peritonitis	†1. Exploratory laparotomy 2. Partial colectomy; ileostomy	Pulmonary embolism	Yes
817204	38	*Cancer of colon metastatic to liver; 1 year post left hemicolectomy	Exploratory laparotomy; liver biopsy	Metastatic cancer from colon	Yes
264488	58	*Cancer of sigmoid flexure of colon; hypertension; arteriosclerotic heart disease	†1. Transverse colostomy 2. Sigmoid resection †3. Exploratory laparotomy	Hemorrhage into adrenal glands	Yes
297793	71	*Perforated cancer of splenic flexure of colon with metastasis to spleen and massive hemorrhage; benign prostatic hypertrophy	†1. Transverse colostomy 2. Resection of splenic flexure of colon; splenectomy; transverse colostomy	Generalized peritonitis	No
839855	73	*Acute diverticulitis of colon; cancer of bladder; generalized arteriosclerosis; rheumatic heart disease with mitral stenosis	†1. Sigmoid colectomy 2. Transurethral resection of bladder 3. Gastrostomy 4. Tracheostomy	Generalized arteriosclerosis	Yes
840708	72	*Cancer of rectum; arteriosclerotic heart disease	Transverse colostomy; liver biopsy	Cancer of rectum with metastases	Yes
283593	72	*Cancer of rectum metastatic to abdomen and lung; ventral hernia; hypertensive cardiovascular disease	1. Ventral hernioplasty; colostomy revision 2. Small bowel resection	Metastatic cancer from rectum	No
834005	67	Acute appendicitis with perforation and abscess; hypertension; 2 years post myocardial infarction	†1. Appendectomy with drainage †2. Cardiac massage (twice)	Cardiac arrest	Yes (M. E.)
615165	85	Acute appendicitis; coronary occlusion	†Appendectomy	Coronary occlusion	No

(* Cancer Cases: 13) († Emergencies: 13) (M. E.: Medical Examiner's case)

TABLE I: OPERATIVE DEATHS, GENERAL SURGERY (PAVILION)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
		DEATHS RELATED TO DISEASES OF BILIARY TRACT, LIVER, PANCREAS: 15			
570734	51	Biliary cirrhosis; tertiary lues with aortitis and angina; 1 year post cholecystectomy	Common duct exploration; liver biopsy	Liver cirrhosis	Yes
404955	62	Choledocholithiasis; 9 years post cholecystectomy; post total colectomy for ulcerative colitis	Common duct exploration; removal of small stones	Coronary occlusion	No
858025	62	Choledocholithiasis; chronic pancreatitis; auricular fibrillation; history of ulcerative colitis	1. Choledocholithotomy; cholangiography 2. Gastrostomy †3. Tracheotomy 4. Gastrostomy closure	Pseudomonas enterocolitis with peritonitis	Yes
178075	62	Stricture and calculi of common duct; biliary cirrhosis	1. Excision lymph nodes 2. Choledocholithotomy; common duct and liver biopsies 3. Partial gastrectomy; duodenostomy; gastrostomy	Biliary cirrhosis	Yes
854307	65	Injury to common duct; biliary cirrhosis	1. Choledochoplasty 2. Ligation intra-abdominal bleeding point	Biliary cirrhosis	No
716555	67	Stricture of common duct; biliary cirrhosis; arteriosclerotic heart disease	1. Choledochoplasty 2. Drainage of intrahepatic abscess	Hepatic failure	Yes
405885	67	*Cancer of gallbladder; cholelithiasis; arteriosclerotic heart disease	Cholecystectomy	Acute myocardial infarction	Yes
663469	72	Infarction and perforation of gallbladder due to cystic artery thrombosis	†Cholecystectomy	Peritonitis; gastrointestinal bleeding	Yes
836865	33	Liver cirrhosis; bleeding esophageal varices	1. Splenoportovenography †2. Portacaval shunt †3. Ligation intra-abdominal bleeding points	Hepatorenal failure	Yes

830772	50	Liver cirrhosis	Exploratory laparotomy; appendectomy	Hepatorenal failure	Yes
862016	54	Liver cirrhosis with ascites; septicemia	Transverse colostomy; gastrostomy	Gastrointestinal bleeding	Yes
763759	40	*Cancer of head of pancreas metastatic from breast; post radical mastectomy	1. Radical pancreatoduodenectomy 2. Exploratory laparotomy	Acute hepatic and renal insufficiency	Yes
804076	56	*Cancer of pancreas with common duct obstruction; hypertensive and arteriosclerotic cardiovascular disease; paralysis agitans	Cholecystojejunostomy; lymph node bipsy	Gastrointestinal bleeding	Yes
783947	49	*Cancer of pancreas; cholelithiasis	Cholecystojejunostomy	Cancer of pancreas	No
831873	69	*Cancer of pancreas	Total pancreatectomy; partial gastrectomy and duodenostomy with resection and reanastomosis of superior mesenteric vein	Hepatorenal failure	Yes

DEATHS RELATED TO CARDIOVASCULAR AND VASCULAR DISEASES: 13

422211	30	Rheumatic heart disease; aortic and mitral valvular insufficiency	Aortic valvulotomy	Ventricular fibrillation	Yes (M. E.)
862209	40	Aortic stenosis	1. Aortic valvulotomy †2. Aortic valvuloplasty †3. Tracheotomy †4. Stabilization of sternum †5. Aortotomy closure	Hemorrhage from aortotomy incision	Yes
848235	43	Pulmonic valvular and infundibular stenosis; patent foramen ovale	1. Pulmonic valvulotomy 2. Tracheostomy	Persistent infundibular pulmonic stenosis	Yes
629915	46	Rheumatic heart disease with recurrent mitral stenosis	1. Mitral valvulotomy 2. Tracheostomy	Cerebrovascular accident	No
769472	50	Rheumatic heart disease with aortic and mitral stenosis	1. Aortic and mitral valvulotomies †2. Cardiac massage	Cardiac arrhythmia; ventricular fibrillation	Yes
543598	38	Aneurysm of thoracic aorta; bronchiectasis	Resection of aneurysm, with prosthetic graft	Cardiac arrest	Yes (M. E.)

(* Cancer Cases: 5) († Emergencies: 9) (M. E.: Medical Examiner's case)

TABLE I: OPERATIVE DEATHS, GENERAL SURGERY (PAVILION)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
843386	54	Renal artery aneurysm; cholelithiasis; chronic cholecystitis; arteriosclerotic heart disease	1. Femoral arteriography 2. Excision of aneurysm; cholecystectomy †3. Exploratory laparotomy; gastrostomy; cardiac massage	Cardiac arrhythmia	Yes
812561	61	Generalized arteriosclerosis with peripheral arterial insufficiency; diabetes mellitus	1. Lumbar sympathectomy 2. Mid thigh amputation 3. Debridement of stump 4. Amputation revision 5. Disarticulation of hip	Coronary occlusion	Yes
858518	61	Superior mesenteric artery thrombosis; arteriosclerosis obliterans; post aorticofemoral bypass	†1. Thrombectomy 2. Exploratory laparotomy	Mesenteric artery thrombosis with gangrene of bowel	Yes
400236	74	Arteriosclerosis obliterans of popliteal and mesenteric arteries; arteriosclerotic heart disease	1. Amputation of leg 2. Small bowel resection 3. Tracheostomy	Mesenteric artery thrombosis	No
268039	62	Acute thrombosis of femoral artery; generalized arteriosclerosis	†Femoral arteriography; lumbar sympathectomy	Myocardial infarction	Yes
329454	63	Arteriosclerotic occlusion of left common iliac artery; generalized arteriosclerosis	1. Bypass graft, iliac artery; sympathectomy 2. Embolectomy, femoral artery	Myocardial infarction	Yes
757980	72	Arteriosclerosis obliterans of right internal carotid artery; arteriosclerotic heart disease	1. Carotid arteriography 2. Thrombendarterectomy 3. Gastrostomy	Acute myocardial infarction	Yes
		DEATHS RELATED TO DISEASES OF ESOPHAGUS AND LUNGS: 8			
844291	60	*Cancer of esophagus metastatic to retroperitoneal nodes	1. Esophagogastrectomy 2. Feeding jejunostomy; drainage of empyema 3. Colon interposition to esophagus	Coronary occlusion	Yes

161088	68	*Cancer of esophagus; emphysema	1. Colonic bypass of tumor †2. Gastrostomy †3. Thoractomy; drainage of cervical wound †4. Thoracotomy; plication of perforated colon	Leakage from anastomosis; empyema; bronchopneumonia	Yes
849287	68	*Leiomyosarcoma of esophagus	Esophagectomy with colonic replacement	Acute renal failure	No
441746	81	*Cancer of esophagus; arteriosclerotic heart disease; generalized arteriosclerosis	1. Transposition of colon for bypass of esophagus 2. Tracheostomy 3. Gastrostomy †4. Mesenteric artery exploration; small bowel resection	Arteriosclerosis obliterans of mesenteric artery	Yes
850308	53	*Cancer of lung; pulmonary silicosis, fibrosis, and emphysema	1. Excision lymph nodes 2. Lobectomy; tracheostomy 3. Bronchoscopy	Ventricular fibrillation	Yes
846286	56	*Cancer of lung with intra-abdominal metastases	1. Splenoportography †2. Splenectomy 3. Ligation intra-abdominal bleeding points	Intra-abdominal hemorrhage	Yes
853086	62	*Cancer of lung; cholelithiasis; chronic cholecystitis; inguinal hernia	1. Excision lymph nodes 2. Pneumonectomy	Cancer of lung metastatic to liver	Yes
846019	63	*Cancer of lung	Pneumonectomy	Respiratory and circulatory failure	Yes
		DEATHS RELATED TO MISCELLANEOUS CONDITIONS: 4			
606748	63	*Reccurrent pseudomucinous cystadenocarcinoma of ovary with large and small bowel obstruction	1. Transverse colostomy 2. Ileotransverse colostomy	Recurrent pseudomucinous cystadenocarcinoma of ovary	Yes
853397	72	*Cancer of thyroid metastatic to lung; gastrointestinal bleeding	Biopsy of thyroid tumor	Coronary occlusion	No
396461	80	Indirect inguinal hernia; arteriosclerotic cardiovascular disease	Inguinal hernioplasty	Myocardial infarction	Yes
693814	89	Strangulated inguinal hernia with intestinal obstruction; congestive heart failure; pulmonary edema	1. Inguinal hernioplasty; small bowel resection 2. Tracheotomy	Strangulated hernia with intestinal obstruction; renal failure	Yes

(* Cancer Cases: 10) († Emergencies: 8)

TABLE II

OPERATIVE DEATHS, SURGICAL SPECIALTIES (PAVILION)

Number	*Age*	*Primary Diagonosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
			PEDIATRIC SURGERY: 15		
850591	1 day	Pulmonary artery atresia; pulmonic stenosis	†Pulmonary valvulotomy	Cardiac arrest	Yes (M.E.)
848767	10 weeks	Anomalous pulmonary venous drainage to right atrium; atrial septal defect	Repair of anomalous pulmonary venous drainage	Myocardial failure due to hypoplastic left ventricle	Yes (M.E.)
854090	3½ months	Congenital heart disease; patent ductus arteriosus; congestive heart failure; pneumonia	Transection of patent ductus arteriosus	Cardiac arrest	No
845752	8 months	Primary pulmonary hypertension; patent ductus arteriosus	Pulmonary arterial banding	Primary pulmonary hypertension	Yes
856753	10 months	Congenital left ventricular hypertrophy; mild retardation of physical development	1. Skin and muscle biopsy 2. Cardiopulmonary bypass and aortotomy 3. Closed thoracotomy	Respiratory failure	Yes (M.E.)
830703	2½ years	Patent ductus arteriosus; pulmonary artery stenosis; mental retardation; post pericarditis	1. Exploratory thoracotomy 2. Open cardiotomy with bypass	Cardiac failure	Yes (M.E.)
807370	2½ years	Congenital heart disease with single ventricle and corrected transposition of great vessels	Open cardiotomy with closure of apparent ventricular septal defect	Cardiac failure	Yes
820527	2½ years	Pseudotruncus arteriosus; congenital heart disease	1. Blalock procedure 2. Tracheotomy	Cerebrovascular thrombosis	Yes
866576	5½ years	Congenital heart disease with infundibular pulmonic stenosis; ventricular septal defect	Open cardiotomy; infundibulectomy; closure of septal defect	Cardiac failure	Yes
712207	5 years	Tetralogy of Fallot	1. Open correction of infundibular pulmonic stenosis and ventricular septal defect †2. Cardiac massage	Cardiac arrest	Yes

843304	6½ years	Tetralogy of Fallot	Open correction of tetralogy of Fallot	Left ventricular failure	Yes
705169	14 years	Tetralogy of Fallot with infundibular stenosis	1. Open correction of infundibular stenosis; attempted closure of ventricular septal defect 2. Tracheotomy	Atrioventricular dissociation; cardiac failure	No
862014	New-born	Cardiac arrest due to fetal distress in prolonged labor	†Cardiac massage	Fetal distress in prolonged labor	No
850586	3 days	Ileal atresia; meconium peritonitis	†1. End-to-end ileal anastomosis †2. Mikulicz ileostomy †3. Cardiac massage	Cardiac arrest	Yes
846987	10 months	*Wilms' tumor, left kidney; partial stricture of esophagus	Radical nephrectomy; splenectomy	Nephroblastoma metastatic to renal veins, periaortic nodes, mesocolon	Yes
			FRACTURE: 13		
842365	65	Fracture-dislocation of ankle; Laennec's cirrhosis; chronic pulmonary disease	†Closed reduction, insertion of Steinmann pin	Staphylococcal pneumonia	Yes (M.E.)
849917	67	Intertrochanteric fracture of femur; arteriosclerotic cardiovascular disease	†1. Closed reduction 2. Tracheostomy	Cerebrovascular accident; bronchopneumonia	Yes (M.E.)
862098	73	Intertrochanteric fracture of femur; arterioselerosis; coronary artery disease	†Closed reduction, insertion of Jewett nail	Cerebrovascular accident; pneumonia; myocardial infarction	Yes (M.E.)
849924	74	Intertrochanteric fracture of femur; arteriosclerotic and hypertensive heart disease	†Closed reduction, insertion of Steinmann pin	Coronary occlusion	No
759191	78	Intertrochanteric fracture of femur; arteriosclerotic and hypertensive cardiovascular disease	†Closed reduction, insertion of Jewett nail	Coronary occlusion	Yes (M.E.)
223839	82	Intertrochanteric fracture of femur; arteriosclerotic cardiovascular and cerebrovascular disease	†Closed reduction, insertion of Jewett nail 2. Tracheotomy	Cerebrovascular accident	No

(* Cancer Cases: 1) († Emergencies: 12) (M. E.: Medical Examiner's case)

TABLE II: OPERATIVE DEATHS, SURGICAL SPECIALTIES (PAVILION)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Causess) of Death*	*Autopsy*
844351	84	Intertrochanteric fracture of femur; cerebrovascular accident	†Closed reduction, insertion of Jewett nail	Cerebrovascular accident	No
857543	85	Intertrochanteric fracture of femur; diabetes mellitus; arteriosclerotic heart disease	†1. Closed reduction, insertion of Jewett nail 2. Drainage of labial abscess	Bronchopneumonia	No (M.E.)
853847	86	Subcapital fracture of femur; hypertensive cardiovascular disease; obesity; bronchopneumonia	†1. Austin-Moore prosthesis, femur head 2. Replacement of dislocated prosthesis	Bronchopneumonia	No (M.E.)
847967	90	Subcapital fracture of femur; arteriosclerotic and hypertensive cardiovascular disease	†Austin-Moore prosthesis, femur head	Bronchopneumonia; uremia	No (M.E.)
853375	75	Subtrochanteric comminuted fracture of femur; arteriosclerosis obliterans; foot ulcer; arteriosclerotic heart disease	Mid thigh amputation for ulcer of foot	Coronary occlusion	No (M.E.)
864996	78	Transcervical fractures of femur neck; generalized arteriosclerosis	†1. Closed reduction, insertion of Knowles pin 2. Tracheostomy	Cerebrovascular accident	Yes (M. E.)
850534	80	Intracapsular fracture of femur; arteriosclerotic cardiovascular disease; diabetes mellitus	†1. Closed reduction, insertion of Pugh nail 2. Femoral arteriography	Bronchopneumonia; congestive heart failure; uremia	No (M. E.)
			NEUROSURGERY: 19		
856066	Newborn	Lumbar myelomeningocele	Excision and closure of myelomeningocele	Meningitis; ventriculitis	No
848756	7 months	Bilateral subdural hematomas; congenital cataracts; retinal detachment	1. Excision right subdural membranes 2. Excision left subdural membranes 3. Shunt from subdural space to cisterna magna	Hemorrhage	Yes (M. E.)

867611	63	Subdural hematoma; alcoholic cirrhosis; pneumonia; chronic bronchitis and emphysema	†1. Arteriography †2. Tracheostomy †3. Drainage of meninges	Exsanguination; gastrointestinal hemorrhage; bronchopneumonia	Yes
845230	20	Intraventricular ganglioneuroma; post arteriography, ventriculography, and insertion of ventricular catheter; post craniotomy	1. Torkildsen shunt 2.. Insertion of ventricular catheter †3. Cardiac massage 4. Tracheostomy	Lung abscess	Yes
855385	67	Acoustic neurinoma	Suboccipital craniectomy; tarsorrhaphy; tracheostomy	Cerebral edema; intraventricular hematoma	Yes
862070	3½ years	*Cerebellar medulloblastoma; hydrocephalus	†1. Ventriculostomy 2. Posterior fossa exploration; biopsy of tumor	Meningitis	No
448807	39	*Cancer of breast with widespread metastases	Total hypophysectomy	Cachexia; malnutrition due to cancer	Yes
838526	46	*Cancer of lung	1. Lymph node biopsy 2. Thoracic laminectomy; partial removal of intraspinal metastases 3. Evacuation of hematoma	Cancer of lung	No
833049	51	*Cancer of endometrium with regional metastases	Bilateral high thoracic chordotomy	Carcinomatosis	Yes
755546	55	*Ependymoma, right parietotemporal lobe	1. Carotid artery cannulation 2. Subarachnoid-pleural shunt 3. Shunt revision 4. Subarachnoid-ventricular shunt	Recurrent ependymoma	Yes
413300	56	*Glioblastoma multiforme; Marie-Strumpell spondylitis	1. Arteriography 2. Left front lobectomy	Cerebral edema due to residual tumor	Yes
848537	65	*Glioblastoma multiforme; hypertensive cardiovascular disease	1. Ventriculography; partial excision of tumor 2. Tracheostomy	Glioblastoma multiforme	Yes
667089	71	*Cancer of thyroid metastatic to mediastinum, humerus, calvarium, cerebrum, scalp	1. Arteriography †2. Tracheostomy 3. Sagittal venography 4. Partial removal of intracranial tumor	Meningitis	No

(* Cancer Cases: 8) († Emergencies: 12) (M. E.: Medical Examiner's case)

TABLE II: OPERATIVE DEATHS, SURGICAL SPECIALTIES (PAVILION)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
857551	74	*Cancer of bladder with regional and pulmonary metastases; pulmonary emphysema	Bilateral thoracic chordotomy	Prolonged hypertension	Yes
820890	19	Cerebral aneurysm; subarachnoid hemorrhage	†Ventriculography; arteriography; evacuation of clot; temporal lobectomy	Cerebral edema	Yes
868995	44	Carotid artery aneurysm at posterior communicating artery	1. Bilateral carotid angiography 2. Clip trapping of aneurysm †3. Tracheostomy	Cerebral edema with medullary compression	Yes
488358	48	Multiple carotid artery aneurysms; hypertensive cardiovascular disease	1. Carotid arteriography 2. Application of clamp 3. Carotid artery ligation 4. Tracheostomy	Cerebral edema due to cerebral ischemia	No
850588	49	Diabetes mellitus; hypertensive cardiovascular disease; diabetic retinopathy	1. Hypophysectomy †2. Cardiac massage 3. Tracheostomy	Cardiac arrest	Yes (M. E.)
181066	49	Multiple sclerosis with paraplegia	Intrathecal injection of alcohol	Perforated gastric ulcer	Yes
			OPHTHALMOLOGY: 1		
730403	47	Aphakic retinal detachment; polycystic kidneys; hypertensive vascular disease	Retinopexy with scleral buckling 360°	Myocardial infarction	No
			PLASTIC SURGERY: 1		
843120	5 years	Third degree burns of 45 per cent of body surface	Debridement of burns; homo- and autografting of skin (6 times)	Septicemia	No (M. E.)
			UROLOGY: 17		
801929	55	*Recurrent cancer of bladder; post radical cystectomy, partial hysterectomy, and cutaneous ureterostomy; pyelonephritis; hydronephrosis; small bowel obstruction	Gastrostomy	Carcinomatosis	Yes

392486	61	*Cancer of bladder; inactive pulmonary tuberculosis; arteriosclerotic cardiovascular disease; abdominal aortic aneurysm	1. Cystoscopy under anesthesia 2. Radical cystectomy; bilateral cutaneous uretcrostomy	Uremia	Yes
619785	69	*Cancer of bladder	†Segmental resection of bladder	Septicemia	Yes
856756	70	*Cancer of bladder	1. Transurethral resection of bladder 2. Radical abdominoperineal cystectomy; bilateral cutaneous ureterostomy	Cancer of bladder with widespread metastases	Yes
854656	73	*Cancer of bladder; pulmonary emphysema	1. Suprapubic cystostomy; implantation of radon seeds 2. Bilateral cutaneous ureterostomy	Pneumonia	Yes
637999	80	*Cancer of bladder; nonfunctioning left kidney; right hydronephrosis; arteriosclerotic hypertension	Transurethral resection of bladder	Uremia	No
859013	64	*Cancer of cervix metastatic to vagina, bladder, lymph node; bilateral hydronephrosis; septicemia	1. Left nephrostomy 2. Right nephrostomy	Uremia	Yes
665146	73	*Cancer of prostate; hypertensive cardiovascular disease	1. Vas ligation 2. Retropubic prostatectomy	Nephrosclerosis	Yes
866219	60	Benign prostatic hypertrophy	1. Bilateral vas ligation 2. Transurethral resection of prostate; suprapubic cystostomy; laparotomy †3. Cardiac massage	Cardiac arrest	Yes (M. E.)
860698	70	Benign prostatic hypertrophy; hydronephrosis; uremia; arteriosclerotic cardiovascular disease	1. Bilateral vasectomy 2. Suprapubic cystostomy	Bactcremia	Yes
584731	79	Benign prostatic hypertrophy; inguinal hernias; pulmonary emphysema; divertieulosis; arteriosclerotic cardiovascular disease	Suprapubic prostatectomy	Acute massive necrosis of liver	Yes

(* Cancer Cases: 9) († Emergencies: 5) (M. E.: Medical Examiner's case)

TABLE II: OPERATIVE DEATHS, SURGICAL SPECIALTIES (PAVILION)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
848760	83	Benign prostatic hypertrophy; cerebrovascular accident; septicemia; arteriosclerotic heart disease	1. Bilateral vas ligation 2. Transurethral resection of prostate 3. Suprapubic cystotomy	Septicemia	No
769200	11	Bilateral hydronephrosis due to bladder neck contracture and ureteral reflux; chronic pyelonephritis; post bilateral nephrostomy	1. Construction of ileal conduit; appendectomy †2. Cardiac massage	Cardiac arrest	Yes
851436	53	Bilateral renal calculi; hyperparathyroidism; hyperthyroidism	1. Nephrectomy 2. Pyelolithotomy	Septicemia	No
848046	55	Urethral stricture; hydronephrosis and pyelonephritis with uremia; bronchopneumonia	1. Suprapubic cystotomy 2. Construction of ileal conduit 3. Closure of evisceration	Renal failure	Yes
542826	58	Right ureterolithiasis and pyelonephritis	Ureterolithotomy	Acute pyelonephritis	No
340558	75	Pulmonary infarction; benign prostatic hypertrophy; arteriosclerotic cardiovascular disease; enlarged heart; congestive failure	Suprapubic cystotomy; bilateral vas ligation	Coronary occlusion	No

(†Emergencies: 1)

TABLE III

(NONOPERATIVE DEATHS (PAVILION)

Number	*Age*	*Primary Diagnosis*	*Cause(s) of Death*	*Autopsy*
		GENERAL SURGERY: 12		
833223	66	*Cancer of breast metastatic to lungs, liver, lymph nodes, skin; cholelithiasis; hypertensive cardiovascular disease	Metastatic cancer from breast	Yes
830968	59	*Cancer of esophagus metastatic to liver and mediastinum; post esophagectomy	Metastatic cancer from esophagus	No
865878	72	*Cancer of lung	Tracheal obstruction	Yes
835603	47	*Retroperitoneal liposarcoma	Recurrent liposarcoma	Yes
456512	55	*Reticulum cell carcinoma of stomach metastatic to retroperitoneal lymph nodes and liver; post exploratory laparotomy	Malignant lymphoma of stomach with metastases, ascites, pleural effusion	Yes
852049	59	*Post esophagogastrectomy for gastric cancer metastatic to regional nodes, liver, pancreas	Gastric cancer with widespread metastases	Yes
827513	62	*Recurrent cancer of colon	Abdominal carcinomatosis	No
867162	75	*Cancer of rectosigmoid metastatic to liver; post transverse colectomy	Cancer of rectosigmoid with metastases	No
671547	48	*Multiple intestinal fistulas due to radiotherapy for cancer of cervix; post transverse colostomy; dehydration; malnutrition	Septicemia; multiple abscesses	Yes
855085	69	*Cancer of ovary with intra-abdominal metastases; duodenal ulcer; chronic bilateral pyelonephritis	Metastatic cancer from ovary	Yes
670313	62	§Duodenal ulcer with massive hemorrhage	Hemorrhage from ulcer	No
853315	65	§Ruptured aneurysm of aortic arch; arteriosclerotic cardiovascular disease with myocardial infarction	Ruptured aneurysm of aortic arch	Yes
		PEDIATRIC SURGERY: 2		
846086	3 months	Patent ductus arteriosus; ventricular septal defect; bronchopneumonia	Atelectasis	Yes
841529	10 months	Ventricular septal defect; mongolism	Pneumonitis	No

(* Cancer Cases: 10) (§ Nonoperative Emergencies: 2)

TABLE III: NONOPERATIVE DEATHS (PAVILION)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Cause(s) of Death*	*Autopsy*
		OTOLARYNGOLOGY: 2		
808728	14	*§Recurrent embryonal rhabdomyosarcoma of cheek; anemia due to hemorrhage	Hemorrhage due to rhabdomyosarcoma	Yes
859876	62	*Cancer of nasopharynx metastatic to skull, neck, and thoracic spine; paraplegia	Respiratory failure due to paraplegia	No
		UROLOGY: 4		
844795	67	*Cancer of bladder; right hydronephrosis	Septicemia	Yes
272975	67	*Cancer of bladder metastatic to lungs; arteriosclerotic cardiovascular disease; bronchopneumonia	Metastatic cancer from bladder	Yes
855366	85	*Papillary cancer of renal pelvis with metastases; hypertensive cardiovascular disease	Carcinomatosis	Yes
179950	76	Cerebrovascular accident; prostatic obstruction; arteriosclerotic cardiovascular disease	Cerebrovascular accident	No

(* Cancer Cases: 5) (§ Nonoperative Emergencies: 1)

TOTAL PAVILION DEATHS—1960

Operative deaths	125	Autopsies	101 (including 15 Medical Examiner's cases)	69.7%
Nonoperative deaths	20	No autopsies	44 (including 6 Medical Examiner's cases)	
	145		145	
Cancer cases in which cancer caused death	32	Deaths following operative emergencies		45
Cancer cases with other causes of death	29	Deaths following nonoperative emergencies		3
Total Cancer Cases	61	Total Deaths Following Emergencies		48

TABLE IV

OPERATIVE DEATHS, GENERAL SURGERY (PRIVATE)

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
		DEATHS RELATED TO GASTROINTESTINAL DISEASES: 20			
844299	48	*Cancer of stomach and omentum	Exploratory laparotomy; biopsy of omentum; cecostomy	Carcinomatosis	No
811961	52	*Cancer of stomach with intestinal obstruction; post esophagectomy and total gastrectomy	Ileosigmoidostomy	Carcinomatosis	Yes
860783	64	*Cancer of stomach with metastases; hypertension	Total gastrectomy	Gangrene of colon; peritonitis	Yes
527871	65	*Cancer of stomach with metastases; bronchopneumonia	Partial gastrectomy; gastrostomy	Metastatic cancer from stomach; bronchopneumonia	Yes
841855	81	*Cancer of peritoneum; post cholecystectomy and choledocholithotomy	Lymph node biopsy; gastroenterostomy	Multiple injuries	Yes (M. E.)
834380	77	*Small bowel obstruction and gangrene due to adhesions; 5 months post sigmoid resection for cancer	Lysis of adhesions; resection of gangrenous ileum	Acute pulmonary edema and shock due to embolus	No
843483	87	Mechanical small bowel obstruction due to adhesions; arteriosclerotic cardiovascular disease	Lysis of adhesions; appendectomy; gastrostomy	Myocardial infarction due to coronary occlusion	Yes
850557	95	Intestinal obstruction; scoliosis; post nephrectomy	Reduction of small bowel volvulus; gastrectomy	Acute renal failure	Yes
810157	24	Acute appendicitis with gangrene and perforation; gastrointestinal bleeding	†1. Appendectomy 2. Exploratory laparotomy; dismantling of gastrojejunostomy 3. Total gastrectomy	Septicemia; hepatorenal failure	Yes
854660	55	Upper gastrointestinal bleeding; obesity; hypertension	1. Gastrostomy; excision of gastric varix; splenectomy 2. Exploratory laparotomy	Cardiac arrest	Yes

(* Cancer Cases: 6) († Emergencies: 1) (M. E.: Medical Examiner's case)

TABLE IV: OPERATIVE DEATHS, GENERAL SURGERY (PRIVATE)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
866339	40	Bleeding duodenal ulcer	Partial gastrectomy; gastrojejunostomy; drainage of duodenal stump	Renal failure	Yes
845336	77	Bleeding duodenal ulcer, perforated; pulmonary edema and emphysema; coronary occlusion	†1. Plication of perforated ulcer; gastrostomy 2. Partial gastrectomy	Pulmonary edema due to myocardial infarction	Yes
791098	78	Bleeding duodenal ulcer; sigmoid diverticulitis; duodenal diverticula	†Gastroenterostomy; gastrostomy	Hemorrhage from duodenal ulcer	Yes
861819	65	Gastrojejunocolic fistula; marginal ulcer at esophagogastric junction	1. Dismantling of gastrojejunostomy; fistula resection; drainage of subphrenic abscess 2. Attempted resection of ulcer	Hemorrhage	Yes
861887	36	*Cancer of colon metastatic to liver; chronic ulcerative colitis	Colectomy; ileosigmoidostomy	Hepatic failure	Yes
857337	70	*Cancer of sigmoid flexure of colon; post transverse colostomy	Low anterior resection of sigmoid flexure of colon	Septicemia	Yes
849141	83	*Cancer of colon; osteoporosis; dorsal kyphosis	1. Right colectomy; ileotransverse colostomy 2. Lysis of adhesions; gastrostomy	Pneumonia	Yes
855181	67	*Cancer of rectum; dehydration; glaucoma	Transverse colostomy	Acute renal failure with bilateral adrenal hemorrhages	Yes
868573	57	Multiple polyps of colon; exogenous obesity	1. Multiple colotomies; excision of polyps †2. Cardiac massage	Septicemia	Yes
758352	62	Polyps of colon; right hemiparesis	1. Excision of polyps 2. Exploratory laparotomy; ligation bleeding point	Cerebral infarction	Yes
		DEATHS RELATED TO CARDIOVASCULAR AND VASCULAR DISEASES: 9			
842041	36 days	Congenital heart disease; pulmonic stenosis; ventricular septal defect; transposition of great vessels	†Blalock left subclavian artery to left main pulmonary artery	Cardiac failure	Yes
735469	51	Rheumatic heart disease with mitral stenosis; 4 years post mitral valvulotomy	1. Mitral valvulotomy †2. Cardiac massage	Congestive heart failure	Yes

479761	52	Thrombosis of terminal aorta with involvement of right renal artery; hypertension	Thrombendarterectomy; abdominal aorta; end-to-side bypass of aorta and external iliac arteries	Renal failure	Yes
863363	53	Angina pectoris; arteriosclerotic and hypertensive cardiovascular disease; lipoma	1. Left stellate block 2. Dorsal sympathectomy; cardiotomy and poudrage	Myocardial infarction	Yes
852104	53	*Cancer of bronchus and pericardium; fibrinous pericarditis	†Pericardiotomy; repair of right atrium; cardiac massage	Cardiac arrest	Yes (M. E.)
836087	56	Diabetic gangrene, foot	Mid calf amputation	Coronary occlusion	Yes
852194	68	Ruptured aneurysm of abdominal aorta; arteriosclerotic cardiovascular disease	†1. Resection of aneurysm; prosthetic replacement 2. Ligation bleeding points †3. Cardiac massage (twice)	Retroperitoneal hemorrhage	Yes
720383	71	Ruptured aneurysm, abdominal aorta	†Exploratory laparotomy	Ruptured aneurysm of abdominal aorta	No
601257	73	Arteriosclerotic gangrene, foot	†Mid thigh amputation	Renal failure	No

DEATHS RELATED TO DISEASES OF ESOPHAGUS AND LUNGS: 7

843419	37	*Bronchogenic cancer of lung metastatic to hilar nodes	1. Broncho copy 2. Left thoracotomy	Massive hemorrhage from pulmonary artery	No (M. E.)
846883	50	*Cancer of lung metastatic to mediastinum	1. Thoracotomy; biopsy of mediastinum 2. Tracheostomy	Metastatic cancer from lung	No
694057	51	*Cancer of lung with esophageal metastases and bronchial-esophageal fistula; post pneumonectomy; angina pectoris	1. Esophagoscopy; insertion of tube 2. Esophagectomy with end-to-end anastomosis; repair of fistula 3. Open thoracostomy	Bronchopneumonia	Yes
473576	60	*Cancer of lung with metastases; small bowel obstruction; post upper lobectomy; obstructive jaundice	Exploratory laparotomy; lysis of adhesions; anticolic gastrojejunostomy	Metastatic cancer from lung	Yes
671247	64	*Cancer of lung with metastases; cholelithiasis; coronary artery disease; diverticulosis	1. Transurethral resection of prostate 2. Evacuation of blood clots from bladder	Bronchopneumonia; pulmonary abscesses; metastatic cancer from lung	Yes

(* Cancer Cases: 10) († Emergencies: 10) (M. E.: Medical Examiner's case)

TABLE IV: OPERATIVE DEATHS, GENERAL SURGERY (PRIVATE)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
855150	49	*Abdominal carcinomatosis with esophagogastric obstruction; 4 years post radical mastectomy and radiotherapy	1. Exploratory laparotomy; biopsy of omentum 2. Esophagoscopy; intubation 3. Insertion of chest tube	Perforated esophagus with mediastinitis and pneumothorax; carcinomatosis	No
504140	63	Bronchiectasis; 12 years post right upper and middle lobectomy with thoracoplasty	Left apical-posterior segmental resection	Cor pulmonale with cardiac and respiratory failure	Yes
		DEATHS RELATED TO DISEASES OF BILIARY TRACT, LIVER, PANCREAS: 6			
792568	4 years	Obstructive jaundice; post cholecystogastrostomy	1. Common duct exploration; biopsy of liver †2. Thoracotomy; laparotomy; cardiac massage	Intra-abdominal bleeding	No
845112	65	Chronic cholecystitis; cholelithiasis; choledocholithiasis; generalized arteriosclerosis; rheumatoid arthritis	1. Cholecystectomy; choledocholithotomy †2. Secondary closure, wound †3. Cardiac massage	Cardiac arrest	No
281947	72	Acute cholecystitis; choledocholithiasis; nontoxic nodular goiter	†Cholecystectomy; choledocholithotomy; duodenotomy; sphincterotomy	Acute renal failure	Yes
46641	79	Cholecystitis; cholelithiasis; choledocholithiasis; arteriosclerotic and hypertensive cardiovascular disease	Cholecystectomy; choledocholithotomy; gastrostomy	Cerebrovascular thrombosis	Yes
851668	57	Diffuse nodular cirrhosis; bleeding esophageal varices	End-to-side portacaval shunt	Massive hematemesis with aspiration	Yes
702619	65	Obstructive jaundice due to pancreatic cyst	1. Cholecystoduodenotomy; pancreatocystogastrostomy 2. Gastrostomy; duodenostomy; ligation of bleeding point	Gastrointestinal bleeding	Yes
		DEATHS RELATED TO MISCELLANEOUS CONDITIONS: 4			
857432	53	*Cancer of breast metastatic to lungs and pancreas	Exploratory laparotomy; biopsy of liver; bilateral oophorectomy	Uremia	Yes

847604	54	*Metastatic cancer, primary unknown; intractable hiccups	Lymph node biopsy	Anoxia	Yes
865021	59	*Epidermoid carcinoma, buttock; arteriosclerotic cardiovascular disease	1. Biopsy buttock lesion †2. Excision of tumor; cardiac massage 3. Tracheostomy	Cardiovascular and respiratory failure	Yes
840089	78	*Cancer of ovary; diabetes mellitus	Exploratory laparotomy; biopsy of tumor implant	Abdominal carcinomatosis	Yes

(*Cancer Cases: 5) (†Emergencies: 5)

TABLE V

OPERATIVE DEATHS, SURGICAL SPECIALTIES (PRIVATE)

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
			PEDIATRIC SURGERY: 1		
822445	4 years	Idiopathic thrombocytopenic purpura; cardiac arrest	†1. Splenectomy; cardiac massage †2. Cardiac massage	Shock following cardiac arrest	No
			FRACTURE: 3		
564148	53	Chronic osteomyelitis of tibia with infected skin ulcer and draining sinuses	1. Elevation bipedicle flap 2. Migration bipedicle flap 3. Drainage wound infection	Probable pulmonary embolus	No
837450	65	*Pathological fracture of femur; breast cancer metastatic to bones and lungs; 5 years post radical mastectomy; post hypophysectomy	†Closed reduction, insertion of Kuntscher nail	Carcinomatosis	Yes
849250	83	Diabetic gangrene of foot; arteriosclerotic heart disease; Kimmelstiel-Wilson disease	Mid thigh amputation	Pulmonary embolus; coronary occlusion; renal failure	No

(*Cancer Cases: 1) (†Emergencies: 3)

TABLE V: OPERATIVE DEATHS, SURGICAL SPECIALTIES (PRIVATE)—*Continued*

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
			NEUROSURGERY: 9		
858938	10	*Medulloblastoma of cerebellar vermis; tricuspid atresia; atrial and ventricular septal defects; Blalock shunt	1. Ventriculography 2. Suboccipital craniectomy	Cardiac arrest	Yes (M. E.)
846374	49	*Astroblastoma, left frontal lobe	1. Carotid arteriography 2. Ventriculography; excision of tumor 3. Tracheostomy	Pontine hemorrhage	No
538106	51	*Metastatic cancer, primary unknown; chronic bronchitis	1. Venticulography; posterior fossa exploration 2. Tracheostomy	Metastic cancer from unknown primary to cerebrum	Yes
866354	55	*Glioblastoma multiforme	1. Arteriography 2. Craniotomy; partial removal tumor †3. Tracheostomy	Bilateral empyema; herniation of uncus	Yes
654878	59	*Glioblastoma multiforme; arteriosclerotic cardiovascular disease	1. Carotid arteriography 2. Partial excision of tumor 3. Tracheostomy	Glioblastoma multiforme	Yes
868346	65	*Cancer of prostate, metastatic; pulmonary emphysema	Total hypophysectomy	Carcinomatosis	Yes
866169	79	*Neurospongioblastoma, right occipital lobe	†1. Ventriculography †2. Occipital lobectomy †3. Tracheostomy	Recurrent brain tumor	No
850824	65	Olfactory groove meningioma	1. Excision of tumor 2. Re-elevation of bone flap	Acute renal failure	Yes
858647	68	Acoustic neurinoma	1. Suboccipital craniectomy; removal of tumor; tarsorrhaphy; tracheostomy 2. Evacuation of hematoma	Postoperative intracranial hemorrhage	Yes

PLASTIC SURGERY: 1

859604	63	Third degree burns of left buttock and inguinal area; chronic alcoholism	1. Debridement of burn 2. Split thickness grafts 3. Debridement; skin graft to decubitus ulcer	Massive pulmonary embolus	Yes (M.E.)

UROLOGY: 9

569975	60	*Cancer of bladder; acute pancreatitis; hydronephrosis; arteriosclerotic cardiovascular disease	Bilateral nephrostomy	Acute pancreatitis	Yes
851347	70	*Cancer of bladder	1. Transurethral resection of bladder tumor 2. Ureterocutaneous transplants; excision pelvic lymph nodes	Septicemia; uremia; renal failure	Yes
287208	75	*Uretero-ileal fistula; pyelonephritis; post cystectomy and cutaneous ureterostomy for cancer of bladder	Right nephrostomy; antegrade catheterization of ureter	Septicemia; uremia; renal failure	Yes
475082	77	*Subdural hematoma; cancer of bladder	Evacuation of hematoma	Subdural hematoma	No
846168	59	*Cancer of kidney	Left nephrectomy	Massive hepatic necrosis	Yes
850845	60	Benign prostatic hypertrophy; hypertension	Suprapubic prostatectomy	Sepsis	Yes
852395	65	Benign prostatic hypertrophy; hypertension	Suprapubic prostatectomy; bilateral vas crush	Uremia; hepatorenal failure	No
864597	84	Benign prostatic hypertrophy; arteriosclerotic cardiovascular disease	Cystoscopy; bilateral vas ligation; suprapubic prostatectomy	Uremia	Yes
847364	61	Pyonephrosis; septicemia; arteriosclerotic heart disease	Left nephrostomy	Septicemia	Yes

(* Cancer Cases: 12) († Emergencies: 4) (M. E.: Medical Examiner's case)

TABLE VI

NONOPERATIVE DEATHS (PRIVATE)

Number	*Age*	*Primary Diagnosis*	*Cause(s) of Death*	*Autopsy*
		GENERAL SURGERY: 17		
840269	31	*Metastatic melanocarcinoma from eye; inanition	Melanocarcinoma	Yes
840627	73	*Recurrent cancer of thyroid; cancer of prostate; diabetes mellitus	Cancer of thyroid	No
597138	51	*Recurrent cancer of breast metastatic to liver and bone	Cancer of breast	No
833450	54	*Carcinomatosis due to metastatic cancer from breast or pancreas; 9 years post radical mastectomy	Carcinomatosis	Yes
819837	57	*Recurrent cancer of breast metastatic to liver and bone	Cancer of breast	Yes
756738	63	*Cancer of esophagus; hypertensive cardiovascular disease	Malnutrition, anemia, and pneumonia due to cancer	No
691025	46	*Cancer of lung; pulmonary carcinomatosis	Pulmonary carcinomatosis	Yes
853124	50	*Cancer of lung	Cerebrovascular accident	Yes
830864	52	*Cancer of lung; benign prostatic hypertrophy	Metastatic cancer from lung	Yes
817603	60	*Cancer of lung	Metastatic cancer from lung	Yes
845147	57	*Intra-abdominal carcinomatosis due to cancer of colon; hepatomegaly; ascites	Carcinomatosis	Yes
776434	74	*Metastatic cancer from colon; post ileocolostomy	Hepatic failure	No
807630	50	*Recurrent cancer of rectum metastatic to lung	Carcinomatosis	Yes
856129	63	*Cancer of pancreas; anemia	Cachexia; pulmonary infarction	Yes
829743	38	§Congestive heart failure; Laennec's cirrhosis; portal hypertension; esophageal varices	Acute pulmonary edema	Yes
245431	41	Laennec's cirrhosis; portal hypertension; bleeding esophageal varices	Hemorrhage from esophageal varices	Yes
778221	54	Echinococcal cysts of lung, liver, spleen	Exsanguination	Yes
		FRACTURE: 1		
835520	46	*Fractures of humerus and femur; cancer of breast metastatic to bones, brain, lungs	Carcinomatosis	No

NEUROSURGERY: 4

784035	13	*Recurrent medulloblastoma	Medulloblastoma	Yes
849379	55	*Recurrent glioblastoma multiforme	Glioblastoma multiforme	Yes
846330	64	*Cancer of kidney with widespread metastases	Carcinomatosis	Yes
854664	42	§Spontaneous subarachnoid hemorrhage	Subarachnoid hemorrhage	Yes

OTOLARYNGOLOGY: 1

861965	52	*Cancer of breast with widespread metastases	Metastatic cancer from breast	Yes

UROLOGY: 7

840631	41	*Carcinomatosis; vesicovaginal fistula; post construction of ileal conduit	Carcinomatosis	Yes
396643	43	*Recurrent carcinoma of antrum; post radical neck dissection and radical maxillectomy	Malnutrition and pneumonia due to recurrent tumor	No
688332	71	*Cancer of bladder metastatic to liver; arteriosclerotic cardiovascular disease; pulmonary emphysema	Cancer of bladder	Yes
475109	81	*Laennec's cirrhosis; cancer of liver and prostate; post bilateral orchiectomy; diabetes mellitus	Hepatic failure; pneumonia	Yes
655795	40	Acute pyelonephritis with multiple abscesses	Septicemia; pyelonephritis	Yes
852188	65	Acute renal failure; uremia; alkalosis	Acute renal failure	Yes
845467	100	Multiple renal, hepatic, and pancreatic cysts; arteriosclerotic cardiovascular disease	Renal insufficiency	Yes

(* Cancer Cases: 23) (§ Nonoperative Emergencies: 2)

TOTAL PRIVATE DEATHS—1960

Operative deaths	69	Autopsies	77 (including 4 Medical Examiner's cases)	77.8%
Nonoperative deaths	30	No autopsies	22 (including 1 Medical Examiner's case)	
	99		99	

Cancer cases in which cancer caused death	33	Deaths following operative emergencies	18
Cancer cases with other causes of death	24	Deaths following nonoperative emergencies	2
Total Cancer Cases	57	Total Deaths Following Emergencies	20

TABLE VII

OPERATIVE DEATHS, GENERAL SURGERY (SEMIPRIVATE TEACHING SERVICE)

Number	*Age*	*Primary Diagnosis*	*Operation(s)*	*Cause(s) of Death*	*Autopsy*
854606	49	*Cancer of esophagus	Barnes-Redo gastrostomy	Cancer of esophagus	No
544967	56	*Cervical lymphadenopathy; 9 years post hemilaryngectomy and radical neck dissection for cancer	†1. Tracheotomy; cardiac massage 2. Split thickness skin graft to hand	Cerebral atrophy; bronchopneumonia	Yes (M.E.)
805088	65	*Cancer of stomach; urinary retention; periurethral abscess	Suprapubic cystostomy; incision and drainage of periurethral abscess	Carcinomatosis	Yes
505257	28	*Metastatic melanocarcinoma	Biopsy of liver	Melanocarcinomatosis	No
852678	48	*Malignant lymphoma; small bowel perforations	Small bowel resection	Malignant lymphoma	Yes
864172	76	*Lymphosarcoma of ileum; incarcerated umbilical hernia; arteriosclerotic cardiovascular disease	Umbilical hernioplasty	Generalized lymphosarcoma	No
862360	53	*Cancer of rectosigmoid; acute ulcerative colitis	1. Partial colectomy with ileosigmoidostomy 2. Drainage parotid abscess 3. Tracheostomy	Intra-abdominal carcinomatosis	Yes
855178	67	*Cancer of rectum; hypertensive cardiovascular disease; pulmonary emphysema; peripheral vascular disease	1. Sigmoid colostomy; construction mucous fistula 2. Resection of gangrenous mucous fistula 3. Bilateral burr holes	Uremia	Yes
647356	48	*Ileo-rectal, -sigmoidal, -vesical, -cutaneous fistulas due to radiotherapy for cancer of cervix; 7 years post radical hysterectomy	1. Ileostomy; cystoscopy 2. Cystoscopy 3. Retrograde pyelography †4. Cardiac massage	Progressive renal failure	Yes
825037	49	*Cancer of common duct	Exploratory laparotomy	Cancer of common duct	Yes

829962	59	*Cancer of pancreas	1. Exploratory laparotomy; pancreatocystojejunostomy; cholecystojejunostomy 2. Exploratory laparotomy; transverse colostomy	Carcinomatosis	Yes
768990	63	*Acute parotitis; cancer of gallbladder metastatic to liver, skull, spine, femur; fracture of femur	1. Austin-Moore arthroplasty, left hip 2. Drainage parotid abscess	Carcinomatosis	Yes (M.E.)
870843	40	Atrioventricular canal	1. Closure atrioventricular canal †2. Cardiac massage	Cardiac arrhythmia	Yes
604472	56	Rheumatic heart disease with mitral stenosis; hyperthyroidism, controlled	1. Mitral valvulotomy 2. Femoral and iliac end-arterectomy 3. Above knee amputation †4. Tracheostomy	Acute occlusion of mitral valve by mural thrombus of left atrium	Yes
852673	52	Gynecomastia; hepatosplenomegaly with ascites; chronic pulmonary insufficieney with fibrosis and emphysema	1. Biopsy of breast 2. Biopsy of liver	Pulmonary insufficiency with superimposed infection	No
852116	61	Liver cirrhosis with esophageal varices, aseites, and jaundice	†Portacaval shunt; ligation of gastro-esophageal varices	Gastrointestinal hemorrhage	No
758048	62	Hepatoma; liver cirrhosis; esophageal varices	Splenoportography; venography	Hepatic failure	Yes
864359	66	Liver and lung abscesses; acute pyelonephritis; gastro-intestinal bleeding; arteriosclerotic cardiovascular disease	Drainage of intrahepatic abscess	Septicemia	No
862356	64	Subacute cholecystitis with choledocholithiasis; arteriosclerotic cardiovascular disease	1. Cholecystectomy; choledochotomy; duodenotomy 2. Drainage subhepatic abscess; gastroenterostomy; gastrostomy; jejunostomy	Acute myocardial infarction	Yes
868555	69	Incarcerated inguinal hernia; chronic duodenal ulcer with hemorrhage; pneumonia	1. Inguinal hernioplasty †2. Partial gastrectomy †3. Cardiac massage	Myocardial infarction	No (M.E.)

(* Cancer Cases: 12) († Emergencies: 7) (M.E.: Medical Examiner's case)

TABLE VIII

NONOPERATIVE DEATHS, GENERAL SURGERY (SEMIPRIVATE TEACHING SERVICE)

Number	*Age*	*Primary Diagnosis*	*Cause(s) of Death*	*Autopsy*
718263	59	*Abdominal carcinomatosis due to cancer of colon	Abdominal carcinomatosis	Yes
841465	61	*Cancer of sigmoid flexure of colon; intra-abdominal carcinomatosis	Metastatic cancer from colon	Yes
850431	66	*Cancer of rectum	Cardiac arrest	Yes (M. E.)
868840	79	Small bowel obstruction; acute myocardial infarction; acute renal failure	Myocardial infarction	Yes

(* Cancer Cases: 3) (M. E.: Medical Examiner's case)

TOTAL DEATHS ON SEMIPRIVATE TEACHING SERVICE—1960

Operative deaths	20	Autopsies	17 (including 3 Medical Examiner's cases)	70.8%
Nonoperative deaths	4	No autopsies	7 (including 1 Medical Examiner's case)	
	24		24	

Cancer cases in which cancer caused death	11	Deaths following operative emergencies	6
Cancer cases with other causes of death	4	Deaths following nonoperative emergencies	0
Total Cancer Cases	15	Total Deaths Following Emergencies	6